AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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IN BERRY SEASON

Drawn and Engraved for the American Agriculturist.

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Contents of this Number.

Agriculture, South African.... 241
Animal Ailments 241
Animals, Mental and Physical Happiness 256
Ashes in the Garden 233
Barn, A Handsome Horse and Carriage....3 *Illus.*.233
Basket Items.... 240-241
Berry Season... ....*Illustration*..227
Birch, The American White.... ..*Illustrated*. 247
Boys' and Girls' Columns:
Doctor's Talks ....4 *Illustrations*..253
Jumbo.... ....*Illustrated*..254-255
Prairie Dogs and their Young....*Illustrated*..252
Strawberry King....*Illustrated*..252
Butter, New Zealand.... 241
Calves, Black Leg in 241
Cattle, The Breton Race of....2 *Illustrations*..235
Coffee as a Decorative Plant. ....*Illustrated*..247
Coffee Culture in India.... 246
Cottage, A Village or Suburban, Costing $2,500.3 *Ill.*.245
Crops, Diversified.... 244
Currant Worms, Remedy for....232
Farm and Garden Work for June....*Illustrated*..228
Farmers' Daughters, A Word to... ... .229
Fertilizers, Nitrate of Soda and Guano 241
Fertilizers, Value of 229
Fertilizers, Superphosphate of Lime 240
Flower-Garden and Lawn for June.... ... .228
Fodder Crops for a small piece of Ground, Rotation of.232
Forest Trees from Seed.... 245
Fruits, Our Canned.... 248
Gold Fish, The Care of... 230
Grains, How many, to the Hill? 244
Grape, The Moyer... ....*Illustrated*..237
Greenhouse and Window Plants for June 228
Harness and Saddle 239
Harness, The Fit of the 233
Horses, Hackney....2 *Illustrations*..238-239
Horses, High-Priced 238
Horticultural Society, The Royal.... 237
Household, The:
Children's Corners.... 250
Hair-pin Cushion, A Neat.... ....*Illustrated*..250
Home—Woman's Realm ... .250
Needle Book and Button Bag, A Serviceable...*Ill.*.251
Sofa Cushion, A Handsome....*Illustrated*..251
Strawberries In and Out of Season 251
Trap, A Good Animal ....2 *Illustrations*..251
Traveling Case, A Convenient....*Illustrated*..250
What Little Folks are Wearing 250
Kitchen and Market Garden for June.... 228
Knot-Weeds—Sub-tropical Plants....3 *Illustrations*..248
Live Stock Notes for June 228
Mental and Physical Happiness of Animals. 256
Moyer Grape.... ....*Illustrated*..237
Orchard and Fruit Garden for June 228
Peonies, Herbaceous and Tree....*Illustrated*..248
Petroleum in Russia and the United States....242
Pigs, Sun Scald in.... 241
Pleuro-Pneumonia, Contagious ....*Illustrated*..234
Poisons in the Garden 230
Potatoes, New, Introducing.... 240
Poultry—Eggs at Two Cents per Dozen 231
Poultry Fence, How Girls may Build a.... 232
Poultry, Non-sitting Breeds of....*Illustrated*..231
Poultry, Silver-penciled Hamburg, White-crested Black Polish, White Leghorn ....*Illustrated*..231
Quince, Propagation of the, by Layers and Budding.... ... .3 *Illustrations*..237
Rabbit War in Australasia.... 235
Reins, The, How to Hold....*Illustrated*..242
Riding and Driving, Good Rules for... 238
Rice, Wild 240
Road-making in the Prairie States....2 *Illustrations*..242
Sheep, Blind Staggers in... 241
Sheep, Oxford Down ....*Illustrated*..243
Shoeing, Hints on.... 239
Sub-tropical Plants, Knot-Weeds....3 *Illustrations*..248
Sugar—Production, Consumption and Cost 246
Supplementing Pastures 229
Swamp, Reclaiming a 241
Sweet Corn, An Abundance of .... .232
Swine—It Pays to Look after the Bedding Places of Pigs in Pastures 230
Swine—Water for Hogs... 234
Swine—What to do with the Runts 230
Tomatoes, Plenty of Vine, No Fruit 240
Trees, American White Birch ....*Illustrated*..247
Underdraining, The Value of 248
Wheat, Growth of, and its Products in the Mill, X...244
Wisconsin and Michigan, Room in.... 241

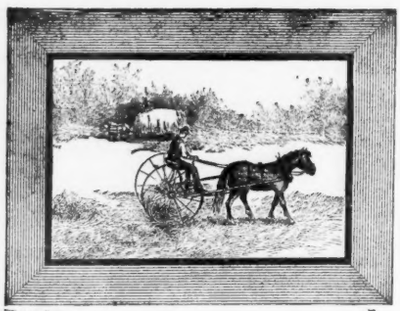
See page 256 and onward for Sundry Humbugs, and other Matters of Special Interest to every one of our Readers.

June.

Oh stay, because thou art so fair,
Sweet rose-month, green and sunny June!
With thee dies music from the air,
The blackbird's and the throstle's tune;
Oh! stay, Sweet June, delay!
—MAXWELL GRAY.

FARM AND GARDEN WORK

JUNE, 1888.



Whoever cultivates the soil for any crop finds June a busy month. Sowing or planting over a large part of the country is not yet finished. The corn crops will need tilling, and in the hay fields the cutting will begin. The time to cut the grass will depend upon what is to be done with the hay. Happy are those who have fields of orchard grass, as they can put the mower into them long before the timothy is ready, or before the farmer thinks it is ready. The greater share of the timothy hay cut throughout the country is allowed to stand too long, if the farmer's own animals are to consume it. Those who buy hay like it with "a plenty of substance," that it may "go further." Hence hay to be sold may stand as long as it may do so without the heads shelling out. The purchaser likes it so—let him have his share of wood for his money. Have you a set of hay caps? If not, get them ready at once, they will often more than save their cost in the first season. Get stout yard-wide or five-quarter sheeting and cut it into squares, hem the raw edges, and sow into each corner a loop of stout cord or small rope, to fasten the caps on by; or, better still, use the water-proof fiber hay caps. If a shower is imminent, place a hay cap over the center of each cock, fastening it by thrusting a stake through the loop of cord and into the hay. Have a lot of stakes ready, and where they will be at hand. It is a bad time to hunt up stakes when a shower is coming up.....Sow fodder corn and other fodder crops in order to have the cutting of these come on in succession.

Live Stock Notes.

Horses require special care during the early days of summer, when they are not yet inured to the heat. See that the collars and harness are well-fitting and kept clean wherever they come in contact with the horses. Never leave them on while resting during the noon hour.....The quantity and quality of the butter will show if the pasture is what it should be. Cows and sheep, if they can get into rank clover fields, will soon become bloated and be difficult to cure. Often the animals are killed outright. Strong fences and secure gates are the best preventives....Pigs in the orchard are best for both the pigs and the orchard, provided there is fair pasturage.....Look to the ewes, and if the lambs are too much for them, increase their feed of grain. This should especially be done as the lambs increase in size.....Spring chickens will bring enough more to pay marketing them in good condition....Ducks should be pushed in growth and marketed early.

Orchard and Fruit Garden.

Destroying insects will be one of the leading tasks of the month. Aphides or plant lice will appear in dense clusters at the ends of cherry and other branches. Use strong tobacco water, or kerosene emulsion, dipping the ends of small trees and showering the large ones. As soon as holes appear in the currant or gooseberry leaves apply white hellebore. Handle carefully, as its dust causes severe sneezing. Persistently applied, the crop may be saved. We cannot hope for plums unless we shake off the curculio. Those who wish to see successful plum culture should visit the specimen plum orchard of Messrs. Ellwanger & Barry, at Rochester, N. Y. A man goes through the orchard daily, shakes down, catches, and destroys the insects. This is not done one day, and omitted for the next two or three days. The result is such crops of such plums as are worth working for. If any caterpillar nests have escaped notice, pull them from the tree, and trample on the insects....Apply a mulch of straw to the strawberry beds, to keep the fruit clean. Where fruit is marketed have boxes and crates in readiness, and pickers engaged.....Go through young orchards, and if buds start where branches are not needed rub them off and it will save pruning later. Look to grafts that were inserted in old trees, and trim and pinch them as if each was a young tree planted in the ground. Begin to thin apples, pears and peaches. Newly planted grapevines should bear but a single shoot, which should be kept tied up. Keeping the surface of a young orchard well cultivated will favor the growth of the trees, and root crops or others that require hoe culture may be grown without injury to the trees. It is probable that many have overlooked the kerosene emulsion, though we have given it several times. Stir kerosene with half its quantity of milk until the oil disappears, and mixing one part of this mixture with twelve of water will answer for most insects. Experiments should be made, and the mixture used as weak as will destroy the particular insect.

Kitchen and Market Garden.

Recollect, if vegetables are marketed, they must be put up in bunches, etc., according to the customs of the market, or they will meet with slow sale. Be sure and plant for succession crops. Ruta-baga turnips and cucumbers for pickles should be sown according to the custom of the locality. In the family garden supply a support for tomato vines; brush laid under them is better than nothing. Weeds! weeds! will be the cry. Some crops, like onions or carrots, if left a day or two too late, will be past remedy. When onions are marketed, they pay better if bunched green and not more than half grown, than when they are ripe.

Flower-Garden and Lawn.

If the summer is a dry one do not mow the lawn so frequently as when the weather is more favorable for growth. Look out for seedlings of weeds in the grass. Thistles, docks, etc., are easily pulled while small and the soil is moist, and save future trouble. At Christmas there is always a demand for everlasting-flowers for decorations. Helichrysums, rhodanthes, and the whole set known by the seedsmen as "everlastings," if sown at once, will give a good crop of flowers in time. Weeds need frequent attention. A strong stiff knife to cut the roots of weeds below the surface is useful. As soon as perennials are out of flower, cut off the clusters.

Greenhouse and Window Plants.

The plants that are set out for the summer months must not be given over to neglect. Domestic animals will break and injure them, and insects make havoc, unless they are cared for. Storms may prostrate the pots, or the plants may suffer in a dry time. Plants are living things, and must be cared for, according to their conditions.

SUPPLEMENTING PASTURES.

The best way of supplementing the pastures in midsummer is to supplement them in June. Take the animals off the pasture for a few days and feed them with grass and clover cut along fence rows and on the unoccupied spots which exist on nearly every farm. If this feed is carefully utilized, the cattle may be kept off the pastures three days in early June and three days toward the close of the month. And this will bring a gain of ten days' grazing in July.

There is scarcely any feed better for farm animals, especially growing stock, than green oats, and it is certainly better to cut a few acres of the oats to support the animals while the pastures are being given a relief, than to reserve the oats for winter. If cut while green, after the grain is formed but while it is yet in the milky state, the straw makes excellent feed—much better than after it is ripened, threshed and saved as it commonly is. The necessity for feeding oats or green corn can be avoided easily by sowing green fodder crops. For this purpose we prefer sweet corn, and second, ordinary field corn. Corn sowed on well-prepared land the last of May or first of June can be fed early in July. But it is better to have enough to feed after the ears have formed.

Rye is another good crop for supplementing the pastures. It may be sown as late as the first of June. Of course it is better to sow it earlier, and yet better to sow it in the early fall; pasture it as opportunity offers during the winter and in the spring till quite late, then allow it to grow till the grain is formed, and cut it for green feed.

Turnips may be sown on the ground occupied by early potatoes. Remove the potatoes as soon as they have ripened, harrow the ground, which is all the preparation it needs, and sow the seed after, not before, a rain. The turnips will not be ready to use until late, yet they are available at a time usually of need, and an acre of turnips furnishes a large amount of good feed. The same is true of pumpkins. If planted early on good ground, they will be ready to use by the time the pastures have dried out, and will be very agreeable to every farm animal. They are also splendid medicine, especially for swine. Being gently laxative, they are just what is needed when the change is made from green to dry feed. Yet other crops may be grown and other forage saved by a little forethought which otherwise would be wasted. Almost every day of the summer it is possible to save some palatable feed for the animals, which is often wasted simply because at the time the pasture is abundant. But we must not wait until the pasture fails. The more we supplement it through the spring and summer, the longer it will last at the latter end of the season.

VALUE OF FERTILIZERS

JOSEPH HARRIS.

A correspondent who desires to have his name not mentioned writes us: "The experiment stations of Connecticut, New Jersey, and Massachusetts last year estimated the value of nitrogen in sulphate of ammonia at seventeen and a half cents per pound; in nitrate of soda sixteen cents per pound. From some articles that have appeared in the AMERICAN AGRICULTURIST, I had supposed that the nitrogen in nitrate of soda was more valuable than in sulphate of ammonia," etc.

Yes. But we were talking about the fertilizing value of the nitrogen, and the experiment stations are talking about the "trade" value. We think nitric-nitrogen is more valuable than organic-nitrogen or ammonia-nitrogen because organic-nitrogen and ammonia-nitrogen must be converted into nitrates before it can be appropriated by the plants—in other words, it is more immediately available. The experiment stations doubtless recognize this fact; but they act on the general rule that "a thing is worth what it will fetch." Last year, nitrogen in the form of nitrate of soda could be obtained at sixteen cents per pound, while it could not be bought in the form of sulphate of ammonia for less than seventeen and a half cents. And this is the reason why the experiment stations estimate nitrogen in their forms at these figures. The fact is, however, that nitrate of soda is rarely if ever found in our commercial fertilizers, and comparatively little sulphate of ammonia. The manufacturers can buy nitrogen in cheaper but less soluble forms, and they are not slow to avail themselves of it.

From the last report of the Connecticut experiment station it would seem that the estimates of the value of commercial fertilizers are very liberal to the manufacturers. They are credited with seventeen and a half cents per pound for nitrogen; eight cents per pound for soluble phosphoric acid; seven and a half cents per pound for "reverted" phosphoric acid; seven cents per pound for phosphoric acid in fine bone, tankage, and dry ground fish, and four and a quarter to five and a half cents per pound for potash. Liberal as are these figures, the country is flooded with commercial fertilizers that are sold at much higher rates. On the average, the manures cost about twenty-five per cent more than they are worth. In one instance a nitrogenous superphosphate was sold for thirty-eight dollars per ton that was worth only eighteen dollars and ninety-three cents per ton. Another sold for thirty-two dollars that was found to be worth only eighteen dollars and ninety-six cents. Another sold for thirty-five dollars that was worth only twenty-two dollars. And, as a matter of fact, the probabilities are that they are not worth what the station estimates them at. The report of the Connecticut experiment station says: "The average cost of the special manures sampled by the station has been forty-two dollars and fifty-two cents, and the average valuation thirty-five dollars and twenty cents. The difference, seven dollars and thirty-two cents, makes the per centage difference 20.9. The corresponding difference in case of the superphosphates was 25.6. This year, as hitherto, the special manures as a class have been higher priced but more concentrated than the other nitrogenous superphosphates, and if the quality of the raw materials composing them is equally good, they have been the more economical to purchase."

There is no possibility of the ingredients being in any better condition than the station assumes them to be; while there is great probability that many of them contain matter that will "analyze well," but which is of comparatively little immediate value when applied to crops. It seems clear from the above quotation that the station makes no effort to accurately determine the "quality of the raw material." The organic nitrogen in the special manures and in the ammoniated superphosphates is estimated at seventeen and a half cents per pound. This may be its "trade" value, but we doubt very much if the able directors of the stations would like to pay this price for it while they could buy nitric-nitrogen at sixteen cents per pound. The Connecticut station analyzed sixty-six different brands of nitrogenous superphosphates and guanoes last year, and estimated the nitrogen at seventeen and a half cents per pound. And even at this high estimate, the average value was only twenty-eight dollars and forty-five cents per ton, while the average selling price was thirty-five dollars and seventy-four cents per ton.

A WORD TO FARMERS' DAUGHTERS.

Last month we had a few words to say to our good friends "the boys," now we desire to hold brief commune with their sisters, and hope to be able to show to the fairer members of the family that for them, also, rural pursuits offer many attractions which promise more profit than can be found in or drawn from many of the occupations which are regarded as essentially feminine. While the farm-house presents to willing hands a varied round of duties, the garden, the orchard, the dairy, and the poultry-yard seem to us fields of remunerative enterprise awaiting those who enter them. Young girls just emancipated from school weary of what they regard as the dullness of country life, and according to their tastes and attainments seek occupation in offices or gravitate to factory life. Shops swallow up a few, and city and village stores engulf thousands and tens of thousands. The wages of sewing girls are proverbially small; the hours in stores are long, and though the work is termed light it is dull and monotonous from year to year. Many are the hardships of working girls, yet all of these are braved, cheerfully at first, by countless generations of young women who prefer an aimless life of unrestricted freedom to the fulfillment of home duties and the trammels of everyday family intercourse.

Long ago the baking and the manufacture of many necessaries were one and all home duties; nowadays the baker is a man, who sells dyspeptic buns and oleomargarine pastries to his unhappy customers, and from his profits keeps fast horses. In the place of wholesome preserves the tables of the multitude are served with canned fruits, put up in the cheapest manner in factories. Women of to-day have to contend for existence under the pressure of a severely restricted area of usefulness, the confines of which grow narrower and narrower as years pass on. This condition of life is due in part to the wider ambition and superior capacity of men, who little by little have taken to themselves the filling of the places formerly occupied by women, not themselves as workers, but as employers; and as women work cheaper than men, these unwise ones are to-day in the ranks of the great wage-earning population of the world, when once they were the honored heads of home life. To go

back to old methods is impossible, still a remnant can be saved, and young girls can be led to see that preserving apples in "mother's" kitchen is not harder work than bottling pickles in a factory; that dairy work on their father's farm is not worse than standing twelve hours a day in a store, to earn from three to seven dollars a week.

There is a widespread want unsupplied for the luxuries of country life; the two most sought for and most difficult to obtain are the products of the dairy and the poultry-yard. Farmers are said to be grasping; we think otherwise, as they, for lack of ambition, sell their milk to dealers and creameries. If the farmers' daughters made as good butter and cheese as their grandmothers did, there would be no need of protective milk associations; if farmers' daughters used incubators and raised and fattened poultry, the present dearth of plump chickens and fat capons would cease. Last March broiling chickens sold wholesale at thirty-eight cents per pound, and the same month capons reached twenty-eight cents per pound. These are remunerative prices, and better rates could be obtained by serving first-class hotels and restaurants. Dairy butter sold down to eighteen cents per pound last March, when more than one owner of dairy cows, through superior skill as a producer, and greater enterprise as a merchant, received one dollar per pound for butter, and his eager customers clamored for more.

Farming is said not to pay; farmers are always poor. Now just let the girls step in and see if they cannot make as good butter as the great creameries put on the market, and when they do, fathers, see to it that your daughters have their just share of your increased profit. It is "the ready penny," the actual possession of money, that we all desire, and this universal longing sends girls to the mill, the factory, and the store. Farmers' daughters who remain at home are fed and clothed but rarely paid for their service. This is what so frequently discourages them. Then again many girls lack manual skill, and at home receive no training which tends to diminish this evil. They know nothing, therefore they "go out." The woman who would most benefit her sex would be the one who, having the means at her command, will place within the reach of farmers' daughters an education which would enable them to gain a comfortable living in the area of country pursuits. She would be a benefactress in two ways, as she would thin the ranks of wage earners and open new fields of industry to worthily ambitious women.

THE CARE OF GOLD FISH.

SETH GREEN.

I have a great many inquiries from time to time concerning the care of gold fish in aquariums. There are many who take care of these fish successfully and manage to keep them for a long time, while others are not able to keep them more than a month or two, when they become diseased, waste away, and die. The cause of losing them is usually attributable to some simple thing, which by the inexperienced would be considered beneficial to the welfare of the fish. I will give to the readers of the AMERICAN AGRICULTURIST a few hints in regard to the care of gold fish, as it may be the means of helping them to keep these beautiful little pets in a healthful condition much longer than they have heretofore done. In the first place, let me caution all interested in the matter against handling the fish or taking them out of the water with the hand. They can be taken in the hand without injury by those who are skillful, but even then they are liable to slip from the grasp, a circumstance which is sooner or later likely to result in the death of the fish. I would therefore advise all to abandon this practice and provide themselves with a small net made of thin muslin or mosquito bar, and having a bag of sufficient depth so that the fish cannot flop out when it is necessary that they should be removed. Never handle them in any way or at any time oftener than is absolutely necessary, or take them out of the water; for the water is their natural element, and when they are out in the air their struggles are as great as yours would be in the water.

When it becomes necessary to change the water pour out only about one-half and then fill the vase again, taking care not to pour the water in too violently. The frequency of changing the water depends on the number and size of the fish in the aquarium and the amount of water used. In my opinion, the small glass globes often used, and holding from a pint to a quart of water, are not suitable for keeping gold fish, as they do not provide sufficient room for the fish to move about and exercise. I do not like to see them in less than three quarts or a gallon of water. Select two specimens colored to your liking, not longer than from four to five inches, and they will do nicely on a partial change of water twice a week. Of course, if the fish are from two to three inches long, three or four in a vase will do nicely. The bottom should be covered with coarse gravel, or preferably good-sized fancy stones, and these should not be washed, as on them collects a greenish substance which upon examination with the microscope is found to contain innumerable living organisms, that provide a great deal of nourishment and food for the fish. I dare say there are many who have observed the fish going about the aquarium with heads down and mouths close to the stones, and wondered what they were doing. When the stones are plentifully covered with this deposit, the fish will do well by feeding them daily with a little fish wafer, but a worm or two or a little fresh meat cut fine is occasionally relished by them, and does them good. In case they do not pick this food up in a short time it should be drawn out with a rubber syphon, as it would be injurious to allow it to decay on the bottom. When it is desired to clean the green slime from the glass, the fish can be poured quickly into a pail, and it is well when the fish are out to let some water run in and rinse it about a few times. By this means the dust and sediment which settles to the bottom will be removed. If your aquarium is provided with a continuous flow of running water, have your pipes so arranged that the feed-pipe comes in at the bottom and the tube is bent slightly so that it sends the water around the bottom. The outlet should be a tube extending to the top. Never feed the aquarium entirely by means of a miniature fountain, as in that case the water merely falls on the surface and runs off without giving the fish a change. The observation of this last suggestion has saved many dealers from loss.

What to do with the Runts.—With every litter of pigs, Dr. A. G. Chase, Kansas, writes us, there will be one dwarf or "runt," often two if the litter is a large one. It will always be profitable, and often, if not generally, an act of humanity to sever the spinal cord, where the neck joins on the head, with a sharp-pointed knife, as soon as these runts are born. They usually die anyway before six months old; and with the utmost care and attention, and with but three to five in the litter, I have never been able to make anything of them but little mangy runts; a torture to themselves and a nuisance to the owner. In ordinary litters, up to their death, they consume milk that would nourish the others and only seems wasted on them. Hence the earlier they are put out of the way the better. Breeders generally know this, but hesitate to kill them; but it is on all accounts the better way.

It Pays to Look after the Bedding Places of Pigs in Pastures.—It is common for sows with their young to resort to a certain place to sleep, even in the pasture. It is good practice to watch these bedding places, and every two weeks or so scatter a double handful of sulphur over the bed. This will not only keep the pigs from getting lousy, but mangy as well, and keep their skins and systems in good condition; for a portion of it will be absorbed by the skin, and it acts as an alterative upon the system. Around the lots and pens carbolic acid should be used with no sparing hand, and no money that the breeder spends will return so good an interest. It not only disinfects from foul odors and noxious gases, but its free use will prevent cholera and other diseases—if not directly imported by bringing infected animals on the place. It clears and purifies the ground and floors, and the air as well.

Poisons in the Garden.—Gardening at the present day can hardly be carried on without the use of poisons! One thing necessary to their effectiveness is to employ them as soon as the need of them is discovered. If currant worms are discovered, and it is two or three days before white hellebore can be applied, a large share of its usefulness will be missed. Every gardener should provide, long before they will be used, white hellebore, Paris green, and pyrethrum —this last, if imported, should be recent. The form grown in California, and called *Buhach*, is put up in tin cans, and keeps well. It is safer that the owner should apply these poisons himself, and have their whole care and management. It is astonishing the ingenuity the ignorant will show in being careless with poisons. Have a place where the supply may be kept, and not only the poisons themselves but whatever is used for mixing and applying them may be kept under lock and key. We must not allow familiarity with these things to beget carelessness in ourselves. Paris green and white hellebore will kill domestic animals as well as human beings, and pyrethrum is not desirable as food for either. For a general insecticide, and especially for potato beetles, we have found Hammond's Slug Shot very convenient and reliable as well.

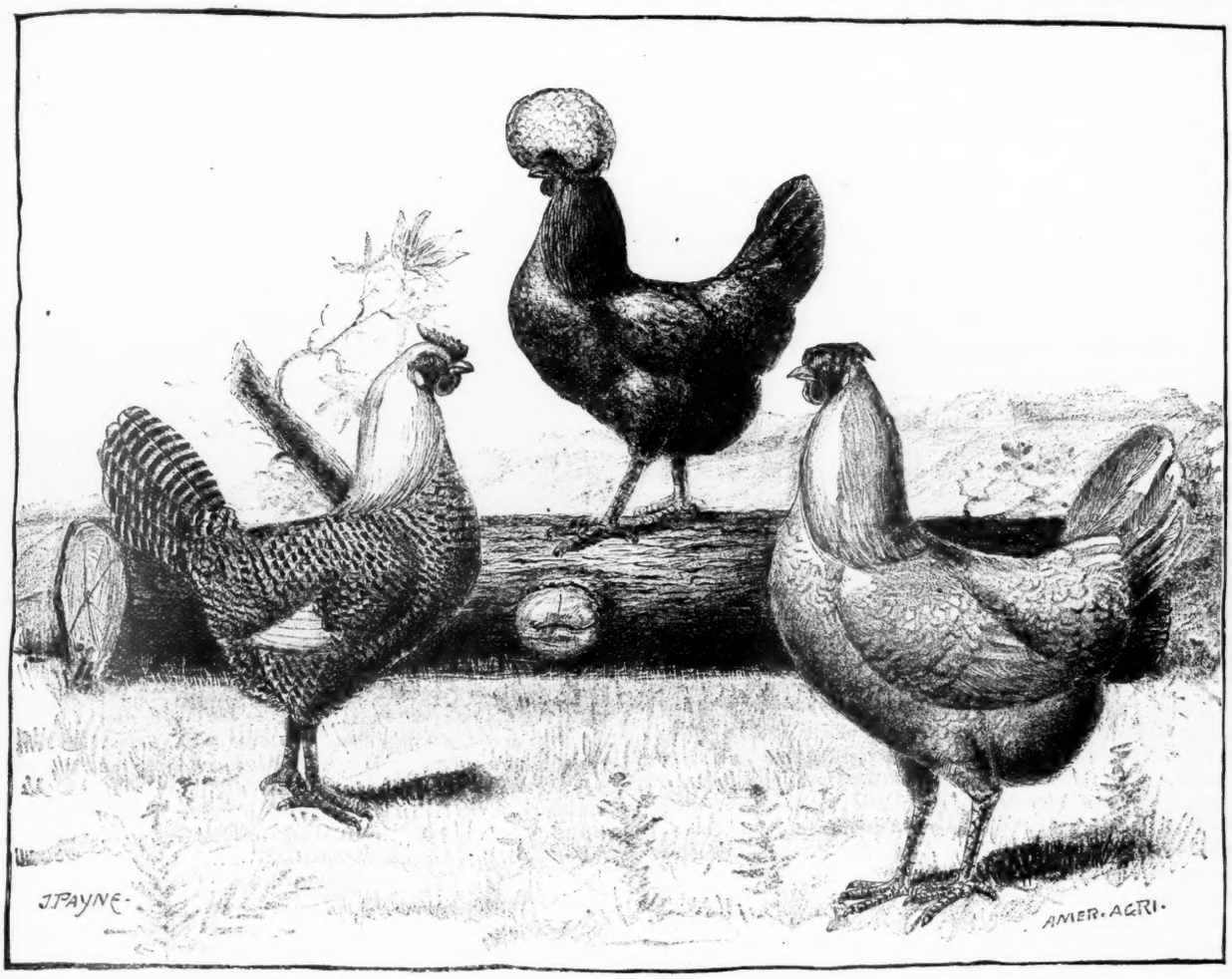
NON-SITTING BREEDS OF POULTRY.

The non-sitters are the Leghorns, Hamburgs, Polish and Spanish. The Leghorns, of which there are black, brown, Dominique, and white, are noted for laying great numbers of eggs. While they may not be termed strictly a non-sitting breed, they cannot be depended upon for hatching. Two or three days appears to satisfy their instincts in this direction, and a deserted nest of eggs, in most cases, will be the result. It appears to be their forte to lay eggs, and their nature to roam and pick up a living on their own account. This makes them very profitable where they have the run of a country place. They are becoming very popular with farmers. Though they are comparatively small in size, the chicks mature early, and are ready for market long before those of the larger breeds. The brown variety is generally preferred by fanciers, as the rich plumage makes the birds very attractive. The young hens may be made to lay almost the year round if comfortable quarters are given them.

The Hamburg family, which embraces the black, silver-spangled, silver-penciled, golden-spangled, golden-penciled, and white, is undoubtedly worthy of much notice. The silver-spangled is the most popular for real beauty as well as profit. They are strictly non-sitters; having bred them for a number of years we have yet to see the first one of this variety attempt to incubate. Although they do not commence to lay as early as the Leghorns, when once they apply themselves to it they have few, if any, equals. They are high flyers and will perch on the highest trees to be found about the yards. Their beautiful rose comb set compactly upon their head makes them preferable in winter to single-comb varieties. When once full grown they are exceedingly hardy, but are tender and hard to raise when chicks, which is a notable fact in all birds that feather early.

The Polish family consists of eight varieties, golden-bearded, silver-bearded, white-bearded, buff-laced, golden, silver, white, and white-crested black, the last being the most popular. The Polish are fair layers, and as fancy birds unexcelled by any. In the hands of the fancier they prove very profitable, and very high prices are often paid for them. As a farmer's fowl, however, they are not to be recommended, as they require more attention than almost any other bird. They are adapted especially for the yard where they can be confined by an inclosure. Their heavy crests are detrimental to their sight, and where the fowls are allowed their liberty they often stray away and are lost. They can endure a great amount of cold if kept dry, and precautions must be taken to keep them so.

There is but one variety of Spanish fowls, and in their general character they differ but little from the Leghorns. The illustration shows representative specimens of the three breeds first named. On the left is a Silver-penciled Hamburg, otherwise known as Bolton Gray. This variety possesses the great egg-producing quality of the silver-spangled, and is very elegant in form and plumage.



SILVER-PENCILED HAMBURG. WHITE-CRESTED BLACK POLISH. WHITE LEGHORN.

Drawn and Engraved for the American Agriculturist.

In the center of the group is a White-crested Black Polish hen, and on the right is a White Leghorn.

EGGS AT TWO CENTS PER DOZEN.

Before I hit on the plan of paying our little boy and girl two cents, for every dozen of eggs they bring to the house, what a wearing, drumming time I had of it to get our hens properly fed and provided with nest and dust boxes, and the eggs gathered each night! I always save the table scraps and a kettle of skimmed milk for them, thickening the mess with meal or shorts, and have it hot on the stove each morning, ready for the men folks or children to carry to the hens in the early forenoon; but the men folks would be sure to forget it, and the children would often be off to their play or school before I would remember to have them feed the biddies; and there that kettle would stand and stew and scorch, cluttering my stove half the forenoon, and then grow chill cold when carried away from it, the hens often getting their breakfast just as they were flying upon their roosts at their early bedtime. And after school, every day of the week, I must remember to tell the children

to hunt the eggs, and not having a bit of interest in the matter, they sometimes forgot, and sometimes half of the nests were not looked after, and it was all up-hill work for me, this having the care of the hens, which were in a building so far from the house I could not tend them myself.

But paying the children for their work has changed all this. Without any telling or reminding, the kettle of scalded milk and meal is promptly lifted on their little wagon as soon as I have it ready after breakfast, and is hauled to the hen-house. I am besieged for boiled potatoes and meat scraps and extra pans of milk, and the hens lay as they never laid before on these premises. Boxes for grain, lime, ashes, burnt bones, and pounded crockery, they have added to the institution and keep replenished, and one of the cattle troughs they have wheedled of their father, for the hens' daily allowance of skimmed milk. I have not seen a frozen egg all winter, but every night I have seen two little round rosy faces, brimful of eager delight and expectancy, looking in through a crack of the sitting-room door, hiding behind them a heaped hatful of eggs, while, with shining eyes, they asked, "Guess, mamma; guess how many eggs to-night?" And, sometimes, though I guess way up in the thirties, they gleefully count out still more from the old felt hat that is their egg-basket.

The regular payment of a few pennies changes a child's natural antipathy against stipulated daily stints of work into keen interest for the same, doing away with the drive, drive, drive that some of us find necessary to secure the prompt, thorough, cheerful accomplishment of tasks set our young children. CLARISSA POTTER.

HOW GIRLS MAY BUILD A POULTRY FENCE.

MISS E. K. WINANS, NEW JERSEY.

Some girls who are poultry farmers have no fathers or brothers to build fences for them. Some girls' fathers and brothers will not build fences for them until "by-and-by," although the fence question is a serious one now, when the hens must be kept from the corn, the ducks from the strawberries, and the turkeys from the young chickens. If the poultry department is grand enough to need separate yards for different breeds, and chickens of different ages, fence building and mending is an important part of the work and expense. Any vigorous girl who can play tennis well, can make a simple lath fence, if the posts have been driven for her; indeed most girls can drive in light scantling posts "all by their lane." The girls who are not equal to either of these tasks may like to know of a light, portable, and serviceable fence. It is made by nailing laths together in square frames, which are to be tied or nailed to each other and to small stakes pointed and driven into the ground. For grown-up chickens fourteen laths are enough for each frame, which will be four feet square. The length of a common building lath is four feet, and one's calculations for fences of this kind must be based upon that. The bundles sold at lumber-yards contain about one hundred laths, and will make seven frames or twenty-eight running feet of fencing. To make the frames, lay out a square of four laths, nail them in place, and then nail ten more laths across, that will make the distance between them about three inches. Make it all firm and straight. Turn over the frame and clinch or break off the nails, driving in more from that side; for it should be as strong as possible with such light material. Clinching nails are best. Drive in one stake for every two frames and fasten two frames together, and then attach to their posts with nails or strong twine. One frame must be left loose for a gate.

This makes a stronger fence than one would suppose, and will stand against high winds or almost anything but large dogs, which sometimes break them. The chickens that are to be confined by it should have one wing clipped, or else a fence only four feet high will not restrain them. The stakes may be eight feet high, and a double course of frames used. For little chickens, set the laths closer, or tack unbleached muslin on half of each frame. Near the sea old fish nets tacked on light frames make pretty and convenient fences. Often it is easier to fence in the garden than to fence out the poultry, because hens will not work so hard even to get at the newly-planted corn as they will for freedom.

Fence-building or any other thing that keeps the girls out in the orchards and fields in May and June is a blessing. They are almost sure to be joyous and good if they are out-doors all day long now, when even hard work is pleasant. Imprisoned chickens should be often set free. Their mistress ought to watch them, keeping them out of mischief, but letting them go far and wide for one happy hour, in which they can forage and enjoy themselves.

REMEDY FOR CURRANT WORMS.

The currant worm is a good thing! Those who neglect their bushes get no currants worth picking, and it gives those who grow for market a chance to get fair prices. Thousands of farmers either buy currants or dispense with that healthiest of luxuries—currant jelly. Properly cultivated currant bushes grow so luxuriantly and produce such a mass of large leaves that it is an easy matter to prevent the currant caterpillars from doing any serious damage. The true remedy is powdered white hellebore, to be had from all druggists.

On about 20,000 bushes last year we used forty pounds of hellebore. This is at the rate of about an ounce to thirty-two bushes. Every bush had a little hellebore, but if there was no signs of worms only the slightest shake of the box was given in passing. Some of the bushes where the caterpillars had commenced their work of destruction were carefully dusted all over. This takes more time and more hellebore, but the cost is nothing as compared with the benefit. For dusting on the hellebore we use an old baking powder tin box. Punch holes in the top large enough to let the powder come through freely—say about the size of a pin's head. One of our neighbors, who has one thousand bushes, mixes two pounds of flour with a pound of hellebore, and he kept his bushes last year free from caterpillars with less than a pound of hellebore. It is better to dust the bushes on a still morning while the dew is on the leaves. But the point of greatest importance is to dust the bushes the first moment there are any signs of the worms. And the next thing is to keep a close watch, and if any worms have escaped or new ones hatched out, go over the bushes again, and stick to it till they are absolutely free from the pest.

Another point of importance is often overlooked. Late in the season we sometimes have a second or third brood of caterpillars, and because the currants are gathered it is thought unnecessary to destroy them. These caterpillars not only injure the bushes, but they descend into the ground for the winter and come out next spring ready to lay eggs by the million. If we ever expect to get rid of these pests, or even greatly lessen their number, we must kill the last brood of caterpillars, whether they are or are not sufficiently numerous to injure the bushes. The same is equally true in regard to the late brood of potato worms. J. H.

Rotation of Fodder Crops for a Small Piece of Ground.—Quite a large quantity of feed can be grown on a small lot. Cut oats when just ripe, bind in small sheaves, allow to stand in small shocks until the straw is cured, then store away in the hay mow to be fed out in the bundle during the winter months. They form an agreeable variety, and a horse will eat them, straw and all, with a relish. After the oats, early potatoes and other vegetables are harvested, the ground may be sown to millet, which in a fair season will make a large quantity of green feed. It should all be cut and fed or converted into hay before seed forms. After the millet is harvested the ground may be plowed and sown to rye, which will be ready to cut for green feed in the spring long before anything else. If the land is not needed for other crops, follow the rye with oats and the oats with millet. If the soil is kept moderately rich, a good crop of each is almost a certainty. With this rotation an immense quantity of green and dry horse-feed can be cheaply grown on a small patch of land, and there will be no chance for weeds. However small the lot some carrots should be grown, to be stored in the cellar for feeding in winter and early spring. For this purpose the Half-long Stump-rooted is best, as it grows to a good size, yields heavily, and is not difficult to harvest. It rarely pays to grow corn for horse feed on a small lot. Immature corn, either green or cured, is not good food for horses. FRED GRUNDY.

An Abundance of Sweet Corn.—Every farmer's family should have an abundance of sweet corn, and that means, if they are fond of it, all that each wants twice a day, dinner and supper. Many prefer it, if it can be had but once daily, at the supper or evening meal. A succession sowing or planting every ten days or fortnight will give a plenty until frost comes. This, which is a luxury to most people, can be had by the farmer without cost, as the resulting fodder will more than pay for the seed and labor. At the late plantings give extra fertilizing; it will come back in the fodder. There are still many who do not know the superiority of sweet corn over the "roasting ears" of field kinds. We do not name varieties, but any kind of sweet corn—that with wrinkled kernels—which can be procured, is vastly better than field corn. If intending to save seed, plant at a distance from common corn, unless that is quite out of tassel.

A HANDSOME HORSE AND CARRIAGE BARN.

The accompanying illustrations show a barn at once elegant in appearance, convenient and useful. As will be seen by the perspective view, figure 1, it has a hip roof with gables on the front and each end, and is surmounted by a cupola. The main structure is forty-four feet long by thirty wide, with sixteen-foot posts; the "annex" is sixteen feet by thirty, making a total frontage of sixty feet. The main part stands upon stone piers which raise the floor two feet above the ground. The floor of the carriage and tool house is flat on the ground, and may be paved or constructed of concrete, asphaltum, or coal-tar and gravel. Figure 2 shows the ground plan. A driveway fourteen feet wide extends entirely through the middle of the main part, with six open stalls on one side, and on the other are two box stalls, a harness closet, and bins for oats and feed. A large window in the end and two smaller ones on each side furnish ample light and ventilation for the stalls. All these windows may be removed in summer and the openings covered with fine wire gauze to exclude flies. Feed passages are provided at the heads of the open stalls, which give access to the mangers and racks. The doors are each five feet wide and ten feet high. A passageway six feet wide extends through the entire length of the barn, with an inclined platform down to the wagon room. This room is furnished with a pump and watering trough. The water supply may be provided by a well or preferably a cement-lined cistern, to which is conducted the water from the roof.

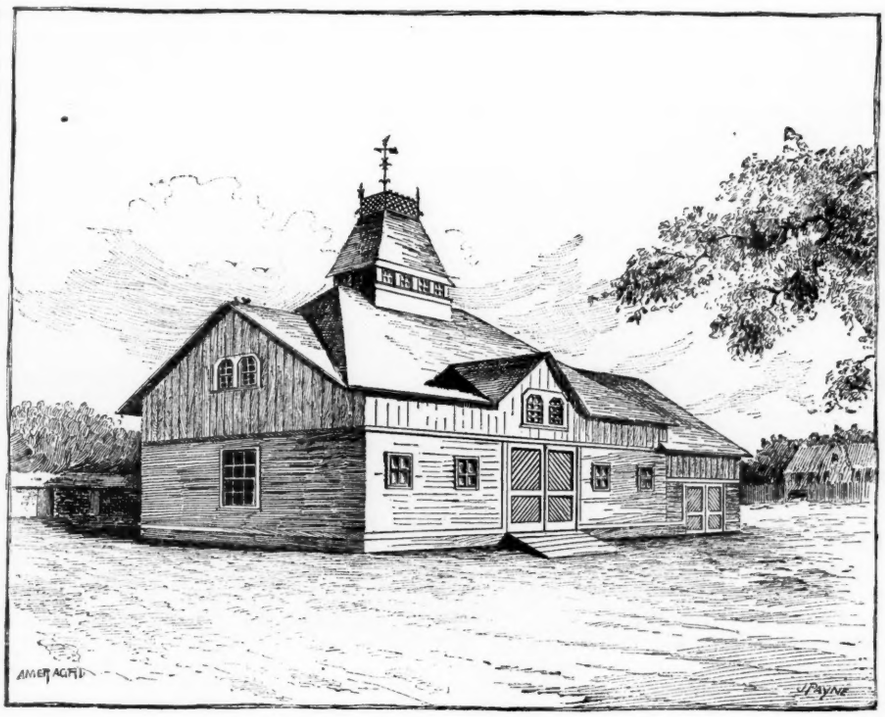


Fig. 1.—PERSPECTIVE VIEW OF BARN.

The first story is ten feet high in the clear. The hight from the upper floor to the apex of the roof is eighteen feet, making, with the gables, a large amount of storage room for hay or other forage. The cupola is eight feet square at the base, tapering to four feet at the summit, and thirteen feet high from the apex of the roof to the top of the railing. Figure 3 is a sectional view showing the frame-plan. The lower ten feet of the barn is covered with pine siding seven-eighths of an inch thick, dressed on both sides, matched and rabbeted, above that is vertical siding dressed and matched. The roof and cupola are shingled. The estimated cost, with first-class work inside and out, is $990. A barn could be built on the same general style and ground plan, without the cupola, covered with vertical siding and battened, for about $500.

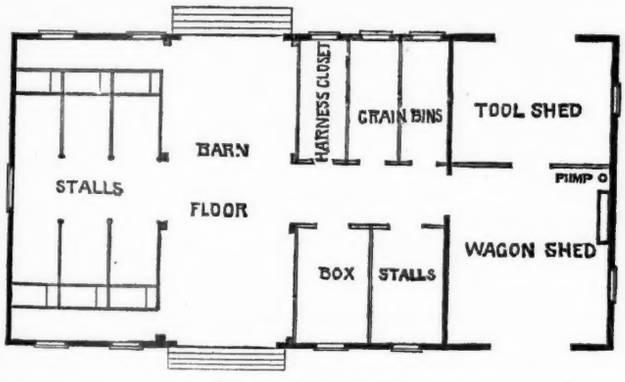


Fig. 2.—GROUND PLAN.

THE HARNESS AND SADDLE.

Keep the harness well oiled and supple, and when either that or the saddle is put on the horse, see that it fits nicely, and does not chafe any part of the body or limbs. In winter be careful to warm the bridle bit before using it, otherwise it might be frosty enough to freeze to the inside of the mouth, and stick long enough to blister it and the tongue badly. Never permit a check rein on the harness bridle to be hooked up tight as drivers will persist in doing; it gives the horse great pain, especially when standing, as all may observe from seeing him constantly tossing his head up and down, and one side to the other, seeking relief from the cruel torment. In addition to this, it soon makes a hard mouth, and when moving along, and especially while ascending a hill, the horse cannot stretch out his head and neck as is necessary for him in order to use his full strength to more easily move the load to which he is attached. The use of the blinders is a pernicious custom. If a horse is broken to harness as he should be without them, there never will be any necessity of wearing them. They are injurious to the eyes and the vision, and it is as absurd to use them in harness as it would be under the saddle. The horse is much more liable to shy, jump, rear, and even run, with blinders, than without them. Having had horses with all these tricks in my possession, I changed the bridle for one without blinders, and they soon ceased their capers; for they could then fully see all objects on both sides in gradually approaching them, as well as in front, and thus were not troubled or scared. The best harness-broken horses I found in my travels abroad were in Russia, and they wore no blinders. I never saw even those of the highest spirit either shy, jump, rear, or attempt to run.

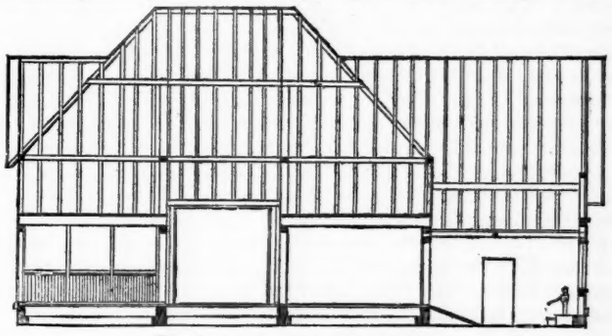


Fig. 3.—SECTION AND FRAME PLAN.

In driving out, teach the horse to stop instantly at the word "whoa," especially in descending a hill. A. B. ALLEN.

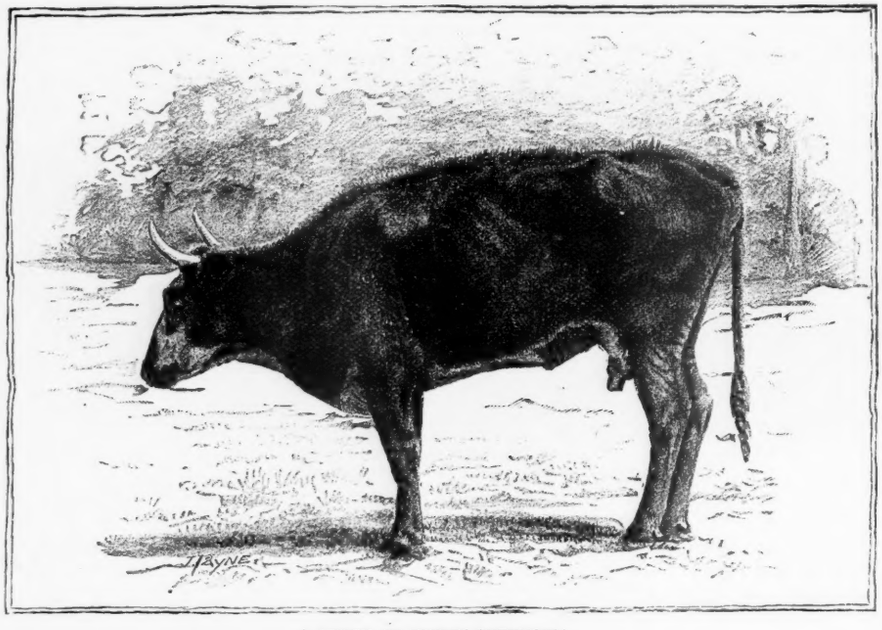
Ashes in the Garden.—Have a place in which to deposit whatever will burn. A shallow trench of proper size should be made to hold the ashes. When a burning has been made, cover the trench with boards to prevent the ashes from being blown away. By care in gathering the rubbish, a supply may be secured without outlay.

CONTAGIOUS PLEURO-PNEUMONIA.

A. C. HEXAMER, D.V.S.

It is now conceded by all veterinarians who have made a study of this plague, that it is only propagated by contagion, and that if we ever expect to free our country from its invasion it must be done by a thorough and relentless process of "stamping out." Pleuro-pneumonia is as yet confined to comparatively small areas, where it can be quarantined and finally exterminated; but should it once reach our vast Western plains it is doubtful whether it could ever be brought under control. It is therefore of the utmost importance that every owner of cattle should familiarize himself with the symptoms of this disease, so that the presence of an affected animal may be detected at once. Our engraving, drawn after a photograph from life, gives so clear a picture of a cow suffering from pleuro-pneumonia that by a careful study of it one can hardly fail to detect a case if it should come under his observation.

The first symptom of an animal affected with pleuro-pneumonia is generally a rise of temperature, which may set in about a week before any other manifests itself. Then the animal becomes dull, leaves the herd, will stand alone regardless of its companions, and will be the last one when driven from pasture to the barn. When hurried it may have a slight husky cough. This may also be heard if the animal is made to rise quickly from a recumbent position. There are also signs of disturbed respiration and slight unusual sounds in the bronchial tubes. The pulse is accelerated, and the attendant may have noticed a shivering fit, also the loss of appetite, hot mouth, dry muzzle, and the milk secretion is lessened. As the disease progresses, it assumes more of a febrile character, the membranes become congested and the bowels constipated. The cough is more frequent, hard and painful; the coat staring; the skin is yellow and scurfy, and successive fits of shivering intervene; the pulse becomes rapid and full, with a moderate degree of firmness, which may number from eighty to one hundred per minute. This activity, however, does not continue long, for the pulse soon becomes smaller, weaker, and not so distinct; a rapid and difficult breathing is observed, and the animal tries to facilitate the process by extending its neck in a straight line. Pain is evinced in a low moan or grunt that accompanies each expiration. The elbows are also twisted outward to relieve the chest from pressure, and when the animal is compelled to movement it is accompanied with pain and groans. Later on the nostrils become dilated, and the sides are moved extensively by the passage of air. There may also be a limpid discharge from the eyes and nose, which usually becomes of a purulent character; the horns and ears, as well as the extremities, become cold; the urine is scanty and high colored, and the bowels remain costive. The skin feels hard and dry beneath the fingers and is tightly bound to the tissue beneath, and the body wastes with remarkable rapidity. Pressure between the ribs, behind the shoulder blade, or upon the back and loins, gives rise to pain, and a low moan is often heard. A loud sound of rushing air is heard as it passes through the tracheal and bronchial tubes, and over the inflamed surfaces, if the ear is placed at the bottom of the neck.



A VICTIM OF PLEURO-PNEUMONIA.

Drawn (from a Photograph) and Engraved for the American Agriculturist.

Although the skilled veterinarian will avail himself of other more minute and accurate means of auscultation and percussion in diagnosing pleuro-pneumonia, the symptoms given above will enable any close observer to detect when danger is imminent. As soon as the presence of the disease is ascertained, every bovine animal in the stable should be killed at once, the stable be thoroughly disinfected, and every part of it washed with a solution of carbolic acid. All the hay, straw, litter, etc., that have been used for the diseased or exposed animals should be burned, and the entire stable whitewashed two or three times. Then the stable is to be closed as tight as possible, and in the center of it is placed a metallic dish holding about two pounds of sulphur, to which is added some alcohol to facilitate its lighting. The sulphur is then set on fire and the stable is to be kept closed for three or four hours. This quantity of sulphur is sufficient for a stable capable of holding twenty cows. The manure from these stables should be mixed with quick lime, about two bushels to every load, and drawn away by horses, in fields where no cattle are allowed. The pastures in which the cattle have been kept should not be used for three or four months at least, and if feasible the stable should not be occupied at once.

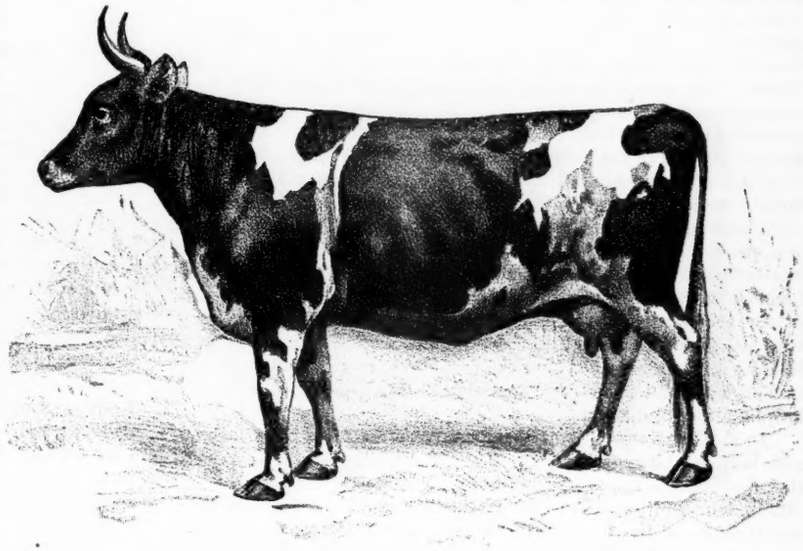
WATER FOR HOGS.

Investigations of the swine plague show that, of all farm animals, swine more than any other should have pure water from a well. The microbe producing the dread disease of swine plague may be carried in a stream of water; hence it is unwise to allow hogs to drink from a stream, though fed by springs, if hogs are kept under bad conditions anywhere above on the stream. The microbe may lie in moist matter for months without having its vitality impaired; hence it is folly to allow hogs to drink from a stream when disease has prevailed within some months among hogs anywhere on the land from which water enters the stream above. The danger is so great, and may so suddenly or unawares make its appearance, that it is never wise to allow hogs to drink from a stream. The danger from stagnant water is as great. While the microbes can find their way into it from only a limited territory, such water always contains organic matter, making conditions favorable to the life of the microbes, and they may exist in it, with evil power unimpaired, for weeks or months. Aside from this, stagnant water is unfit to be drunk; pools, ponds, etc., are far oftener an injury than a benefit.

Nor does every well yield pure water, free from contamination. If the surface water is allowed to enter it, there is as good a chance of its being tainted as there is of the pool being tainted. Nor will the passage of the water through a few feet of loose soil filter out the disease germs. "Seep" wells are often the unsuspected cause of disease; there are many cases of their being proven the sources of typhoid fever, etc. The well, to be safe, must be fed by an underground stream, and it is all the better if it be at least twenty feet below the surface. The soil should be taken away from around the well for several feet back, and replaced with clay stamped solid. And if the mouth of the well is lower than any of the surrounding ground, make a bank of clay around it so high that no surface water can get in. Have a tight curb, to exclude mice, etc.; but not one that will not allow air freely to enter the well. Such a well will yield safe drink for swine, and for other farm animals as well. The very rapid advance of medical research has shown that the contagious or infectious diseases, terrible in their nature, once blamed on evil spirits, are caused by minute organisms lurking in moist, foul ground, or decaying matters; in our food, or drink, most often in the latter. The best provision for the health of ourselves and animals, is water free from contamination.

THE BRETON RACE OF CATTLE.

Brittany, the northeastern province of France, is the home of the cattle represented in the accompanying engravings. It is a foggy region, swept by the Atlantic winds, where the sturdy peasants wring a frugal living from the soil or the sea. The cattle are black and white in color, small, symmetrical, and extremely hardy. In summer they have little if any care, but do the best they can, cropping the scanty herbage of the granite hills and heathery moors. In winter they are given limited rations of bog hay or crushed gorse, and then sent out to pick up what meager fare they can find. Despite privations and hardships these cattle are said to be "useful to the rich and a providence to the poor." The cows, even with meager subsistence, give from 3,500 to 4,200 pounds of milk per year, so rich as to yield from three to seven pounds of butter per week. A cow will give a pound of milk for every pound of hay consumed. The Breton can scarcely be regarded as a beef breed, though the flesh, if well fattened, is of fine quality; yet it lacks size. But a cross of Shorthorn blood supplies the deficiency, and the cross-bred animals mature early and fatten readily, the beef is finely marbled and of excellent quality. The color, form and general characteristics of the "Race Bretonne" leads to the presumption of a common origin with them and the cattle of North Holland, so well known in this country as Holstein-Friesians. The Breton cattle seem admirably adapted to such regions as the more broken parts of New England, and many other sections of this country. The prejudice against small size was encountered by the Jerseys when they were first introduced, but it has disappeared wherever they have become known. The hardy, quiet, deep-milking cattle of Brittany would equally vindicate their worth, if introduced to this country.

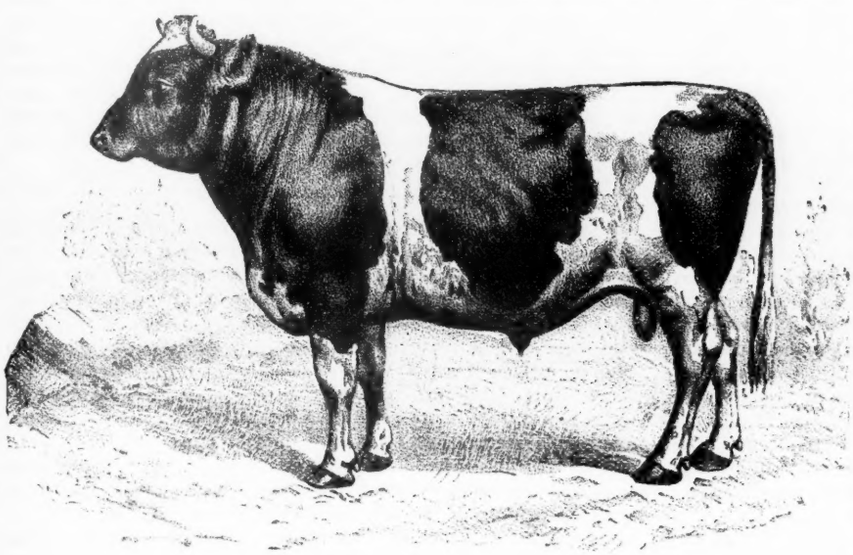


TYPICAL BRETON COW.

THE RABBIT WAR IN AUSTRALASIA.

CHESTER P. DEWEY.

When James Anthony Froude traveled in Australasia three or four years ago, he made the remarkable discovery that the complaints in regard to the devastations committed by the rabbits in those colonies were overwrought, and that no more rabbits were observed during his stay than he would see about an English warren on a moonlight evening. Mr. Froude is not a very keen observer of the facts which pass under his own eyes, and the people in those distant colonies may be excused for doubting his word, and for making the extraordinary efforts that they do to get rid of the rabbit pest, which has been so injurious to their crops. It is officially reported from New Zealand that in 1881 more than five hundred thousand acres of sheep runs were abandoned on account of the rabbits; that the loss in exports was estimated at $2,500,000 per annum, and that upwards of 180,000,000 of these animals had been killed in three years. The money expended has been something enormous. In Victoria, the Parliament began in 1879 by appropriating $6,400, and rose gradually from year to year until in 1884 the appropriation was more than $150,000. New South Wales expended $510,000 per annum for five years. In 1886 the government appropriation in South Australia was $318,000. In New Zealand the appropriation was $200,000 per annum. All these sums are additional to private expenditures which have been very large. The more rabbits are killed the more there seem to be, and the trappers are suspected of introducing the rabbits into new districts while they slaughter them in the old. Every possible effort has been made to get rid of these creatures. The mongoose has been imported from India for their destruction, poison has been employed, gunning has been lifted to a place among the useful arts, and has been popularized to a great extent in the colony, and still the animals increase and multiply beyond anything that is known almost in the whole history of the world.



TYPICAL BRETON BULL.

M. Pasteur, the great French specialist, has been called in, and it is claimed that he has discovered a cure for this rabbit pest; this is to inoculate them with the germs of a certain disease which proves fatal to them, and is not transferred to other animals. This disease is not only infectious but contagious, and spreads with great rapidity, so that when one rabbit has eaten the food containing the germ it spreads within a very short time to the other occupants of the burrow and carries them off with exceeding rapidity. M. Pasteur claims that the germ of this disease which he imparts to the rabbit is easily multiplied in any meat soup. He also declares that he has proved it to be innocuous in the case of sheep, cattle, horses and dogs, which are the domestic animals most likely to share this food with the rabbit. Whether poultry is equally exempt or not he does not say. The rabbit is rather a dainty animal, and is not generally supposed to be brought up on soup or to be fed with a spoon, and it is possible that he might object to taking his rations in this manner; but at all events so far as experiments have been tried they have proved successful. In New South Wales the people have not only taken an interest in the Pasteur remedy, but the government has offered a reward of a hundred thousand dollars for any invention by which this curse can be removed. The AMERICAN AGRICULTURIST has received many letters upon this subject, and we have been quite interested in reading the plans and ideas which our correspondents have presented. Some adventurous American has already started for New South Wales with a remedy, which he keeps secret, and by the use of which he proposes to win the reward offered by the government and to free that colony from

these animals. Experiments made in Victoria and Tasmania in the inoculation of rabbits with diseased germs destroyed eight hundred of these animals which were confined in an inclosure, and which gradually wasted away for a period of seventeen days. Other animals at the same time were inoculated with the same disease, but exhibited no sign or symptom of illness, thus showing that the disease was peculiar to the rabbit.

The inoculating schemes in Australasia have been referred to a commission of experts chosen from all the colonies, who will examine and report upon the various methods devised. In October of last year an experiment was made upon rabbits in an area of five hundred acres, being one of the worst infected runs in New South Wales. The inoculated rabbits were ear-marked, and turned out among the sheep and other domestic animals with results that proved to be fatal within three weeks, in that time destroying the greater portion of the rabbits. In a smaller inclosure it was found that out of four hundred and sixty rabbits only seven lived, and these were left in a decrepit and incapable condition. Some of the farm animals were also inoculated with the same poison, and it was proved satisfactorily that they would not take the infection. Nor is there any danger to human beings. The experts who have handled the virus for months together are unharmed. The owners of the sheep runs in the districts occupied by the rabbits have watched the operations of the government officers with the greatest interest, and are satisfied that the remedy will prove effectual, and in February and March the inoculation was proceeded with in a large number of districts.

In the MacKenzie Country, on the South Island of New Zealand, and between latitude forty-three and forty-four, south, an expedition was made a few weeks since by a large party of officials and others, whose object was to determine the exact line upon which a rabbit fence or barrier should be erected across the island. The Minister of Lands, who headed the party, after very careful examination concluded that it would be impracticable to maintain, even if once erected, a rabbit-proof fence, in a large portion of that region. Besides, an immense glacier which lay upon the mountain slopes of the "Southern Alps," and which was under constant motion, threatened any barrier that might be constructed. The object of this barrier was to prevent the rabbits from migrating from one portion of the colony to another. On the Tasman River, which is in South Canterbury and is near Mt. Cook, there are several miles of bank devoid of vegetation; the river being three miles wide and flowing in numerous deep and rapid channels. This land would be a barrier to the advance of the long-eared foe. The Minister concluded that if a fence was erected for twenty miles on the east side of the Tasman River the rabbits could not cross into South Canterbury. Other fences will be erected at various points in that part of the colony; and on the Waitaki River, where a bridge had afforded the rabbits a means of crossing from one side to the other, a rabbit-proof gate was to be erected, the gate to be closed at night, and a similar gate was to be placed at the railroad bridge upon the same river.

It is almost laughable to read these reports as they appear in the New Zealand journals, and to note the gravity and dignity with which they are expressed. One would think that the invasion of a human foe was to be met, and that these prospecting officials were engaged in laying out a plan of defence. On the whole, it appears that the colonists in various parts of Australasia are really in earnest in their efforts for the destruction of rabbits. The evil is great and unmitigated. It rises in vaster proportions there than in any other country, and our farmers and orchardists will welcome any plan for the destruction of these animals that has proved successful elsewhere. The rabbit is already a pest in California, Kansas, Iowa, Minnesota, Ohio, Indiana, and many other States, as is shown by the complaints published in the Report of the Department of Agriculture from residents of various parts of the United States. The Commissioner of Agriculture, in concluding his remarks on this subject, and in noticing the threatened danger from the introduction of the European rabbit to this country, suggests that a law be enacted conferring upon the Commissioner the power of granting or withholding permits for the importation of birds and mammals, except in the case of domesticated species, certain song birds, and all species intended for exhibition, which may be brought in without special permits. It is in the highest degree important to keep our national area free from birds and animals that are destructive and pernicious, and which increase in such vast numbers that they become a nuisance in all the land. It is better to meet the evil before it arises, than to let it spread to an alarming extent, and then attempt to destroy it. Australasia admonishes the United States.

"Sparrow Grass" and "Grass."—It was formerly more common than at present to hear uneducated people, in their desire to be accurate, say sparrow grass, instead of asparagus, to show that they knew that the plant was the grass of the sparrows; as overparticular people, years ago, said "osters" and "ostyers" instead of the more vulgar oyster. But it is in the market that the greatest economy of language is shown. The market-men never call the vegetable anything but 'grass. Asparagus has the authority of antiquity, as it was used by the ancient Greeks.

The Charity of the Birds.—A gentleman living in Brooklyn, N. Y., keeps a number of pigeons, which during the great storm of March 12th and 13th suffered extremely from the severity of the weather. When their owner was able to reach them, he found the poor birds quite stiff and benumbed with the cold, and carrying them to the house tried to resuscitate them by a warm fire. This he succeeded in doing, and while working over them was astonished to hear a low "peep, peep," proceeding from some unknown source that he could not account for. On examination, however, he discovered that beneath the wings of each pigeon was nestled a tiny sparrow which had taken refuge there from the fury of the blast, and which the larger bird had kindly sheltered and warmed, thus displaying a sagacity and friendliness not expected in the feathered denizens of the air. The great "blizzard" proved very destructive to the sparrows. From Sunday to Wednesday or Thursday they were practically without food or water, and they succumbed to cold and starvation by the million. The city streets had really a deserted look without the busy throngs of birds chirping and flitting about from morning to night. But "charity" to them is forbidden by an inexorable law.

Hybrid Rhododendrons.—If one wishes a single shrub to ornament a front yard or court, the most desirable is a hybrid rhododendron. A good plant of this will cost more at the nursery than a cart load of lilacs and snowballs—and is worth it. For such a use as the above, where it is to be seen every day and several times a day, it should be worth looking at. These rhododendrons are evergreen, hardy, fine in form, and will succeed in any locality where there is not lime in the soil. If there is a limestone soil, dig out a large place, and fill it with good pasture soil. Those who have written about the culture of the rhododendron have made it appear that such a preparation of soil was needed as to discourage all but the wealthy, while in fact there are excellent sorts that will flourish in any good pasture or garden soil. If any one wishes to grow the finest and most costly he must have a gardener to grow them. But one good enough for ordinary mortals, that will be a mass of verdure all the year, and during some weeks in early summer, a glory of bloom quite good enough for most of us. Go to an intelligent and truthful nurseryman, leave the selection to him, if you buy half a dozen or a single plant. If the plants have been well grown, the roots will be a compact ball of earth, and may be taken up and moved, even if the buds are far advanced.

Care of the Asparagus Bed.—No matter how much care has been given to the proper planting of asparagus, it is easy to injure, if not to render worthless, the best bed by beginning to cut too early, and by cutting too late. In planting, we have advised to set strong, vigorous roots, each with many good strong buds. The future treatment of these plants should be to keep the roots strong, and to keep them so well supplied with buds that a part of them, or the shoots from them, may be cut away without injury. If we draw water from a cistern we provide means of refilling it. The asparagus root is like a cistern; we draw upon it by cutting the shoots, and we replenish it by allowing the green tops to grow and to form buds to lie dormant. When a new bed has been planted, the advice is given to not cut it until the third or even the fourth year, in order that each root may get so strong that it will stand the annual cutting. The best and most productive bed ever made may be ruined by cutting it too late in the season. For family beds, the advice is given to stop cutting when green peas come. The grower on the large scale for market judges by the character of his crops when to cease cutting. In no other garden crop do we make so permanent an investment as in asparagus; aside from the first cost, we invest three years of time and care; but if we manage properly the returns continue through an indefinite number of years and are paid each spring. No garden should be without an asparagus bed.

PROPAGATION OF THE QUINCE BY LAYERS AND BUDDING.

W. W. MEECH, N. J.

The quince may be multiplied from seeds, cuttings, and layers. The seed of a species will always produce its kind, but the seed of a variety is uncertain. If propagated from layers or cuttings, or by grafting or budding, the trees will always be of the same variety as the parent tree. All the recent varieties of quinces of merit seem

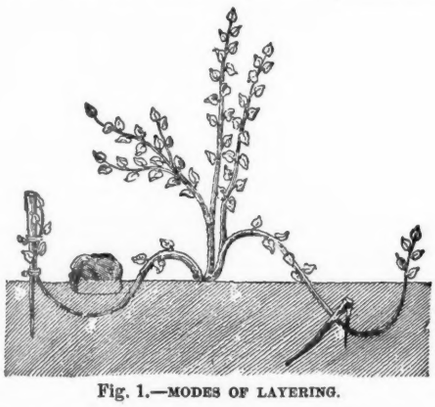


Fig. 1.—MODES OF LAYERING.

to be chance seedlings, which suggests that seed should be selected from the best specimens of the choicest varieties, that there may be still further improvement. Quince seed for planting should never be allowed to get thoroughly dried before it is planted. If not convenient to plant when taken from the fruit, preserve it in moist sand till spring, when, in a well-prepared seed-bed, it should be covered two or three inches deep, and treated as other seedlings.

PROPAGATION BY LAYERS.—It is a very simple operation to bend down a limb and keep it covered with moist earth till it is rooted, and then cut it from the parent tree. If the bent branch is partly cut off or slit up under a bud, or twisted like a withe at the lowest point, it will help both the bending and rooting. A wire twisted around the layer just below the bottom bud in the ground, and holes punched through above and below the wire, may help; or the holes may be made through the layer in the buried portion to stimulate its rooting from the callus of the wounds. The bark is sometimes cut nearly around the layer just below a bud, and bits of wood removed below this cut to induce the formation of a callus, from which roots are emitted. It is sometimes necessary to fasten down stiff branches with a forked peg or a weight, as shown in figure 1. Young shoots of thrifty trees make the best layers.

Mound Layers or *Stool Layers* differ from the others by having the earth heaped up around them instead of being buried in the earth. The sprouts from stumps or around growing trees, being well banked up, will readily root as high as moist earth presses against them.

PROPAGATION BY BUDDING.—The buds may be taken from wood of the growing shoots well matured, or from the preceding year's growth. A cion too late for grafting may be treated as a

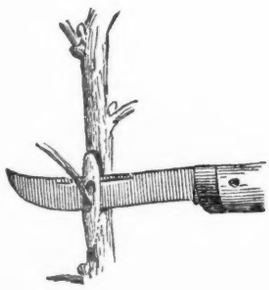


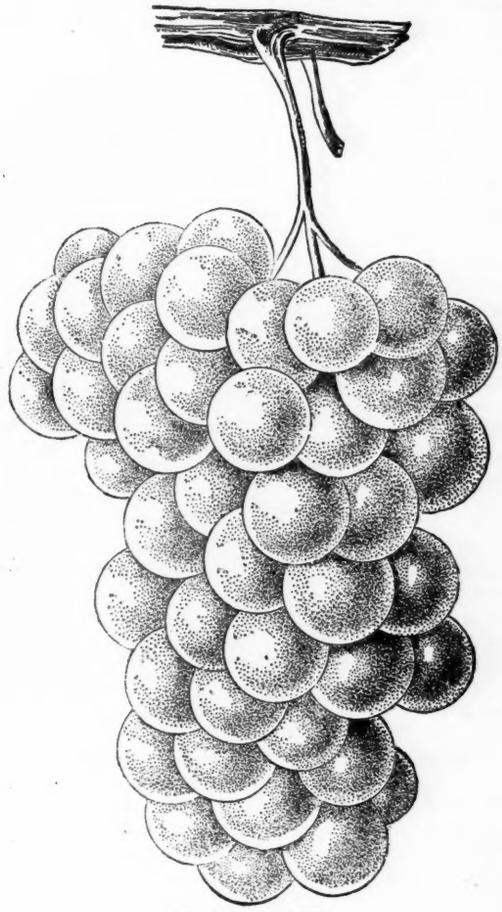
Fig. 2.—CUTTING THE BUD.

Fig. 3.—SHOOT FOR A BUD.

cutting till its buds can be used. The bark of a quince tree can be raised for the insertion of a bud most of the growing season. The best place to insert it is near a bud, or where a bud has become a branch, as the supply of cambium is there most abundant. The bud, with its shield of bark, is cut from above or below, beginning to cut half an inch off, and so cutting as to leave a thin piece of wood under the bud, as shown in figure 2. On the stock cuts are made like a **T**. The corners of the bark being lifted, we slide the bud to its place, and complete the operation by winding a ligament of bass or raffia around the stock above and below the bud, tying it securely. Failure may arise from injury to the cambium in cutting and raising the bark of the stock, from too narrow a cross-cut to receive the shield of the bud, from using immature buds, from the shield being too short (it should be at least an inch long), and from being so loosely tied as to dry out. The south side of a stock is dryer in summer, and so is to be avoided. At figure 3 is seen the mode of training a shoot from a bud. *A* indicates the place to tie the shoot to the stock; *B*, the place to cut off the stock afterwards.

THE MOYER GRAPE.

Our illustration represents a bunch of a new variety of grape which originated in Ontario, Canada, and is now being introduced by Mr. Allen Moyer, after whom it is named. It was produced by Mr. W. H. Read by fertilizing the Delaware with Miller's Burgundy; but notwithstanding its partly foreign blood it has stood



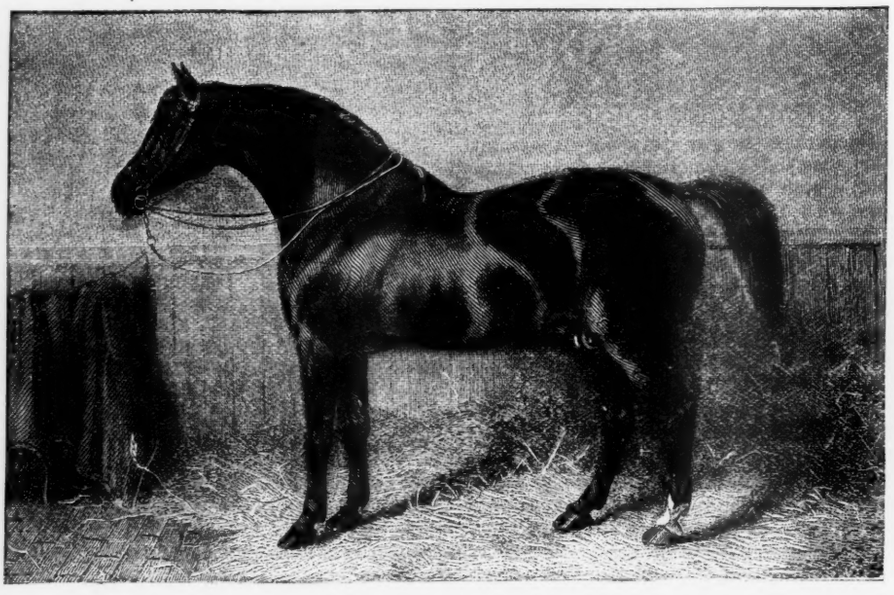
THE MOYER GRAPE.

the Canadian winters without injury. The berry is of medium size, bunch compact and usually shouldered; color red, darker than Delaware. Its quality is stated to be excellent, but the principal claims made by the introducer for this new variety are its hardiness and extreme earliness, ripening earlier even than Champion.

The Royal Horticultural Society has done more in the past, and is capable of doing more in the future, for horticulture, than any other association in the world. Horticulturists in every country have been in sympathy with it in its struggles against misfortunes, and now will rejoice to learn that it promises to resume its former usefulness and prosperity. We can only state, as a preliminary step, that the last meeting and show have been held at South Kensington, and that a headquarters, for meetings and library, have been established, and that the next show will be held in the city of London itself with the consent and patronage of the Lord Mayor. All success attend it. How about the New York Horticultural Society, which appears to be very quiet of late?

HACKNEY HORSES.

The hackney or "hack" is pre-eminently the road horse of England. It is an artificial style of horse, originating in a cross of thoroughbreds with the heavier mares of the country; but the type has become well established, and a well-bred hackney stallion, like the one represented in our illustration, will impress his characteristics upon his progeny with as much certainty as any pure-bred horse. Hackneys are all trotters, but are somewhat different in conformation and action from the American standard trotters. The gait is not the long swinging stride seen in this country, but a high knee action, as seen in the opposite illustration of a hackney mare in pasture. They are from fourteen to fifteen and a half hands high, road horses of larger size being known as "cobs." Their general appearance is well represented in our illustrations herewith. They have fine bony heads, powerful sloping shoulders, clean flat legs, short pasterns, sound feet, deep chests, and strong loins, with spirit and great powers of endurance. According to a high English authority "they combine blood with power, carrying their twelve stone [168 pounds], and trotting seventeen miles within the hour, or for a shorter spurt their two miles in five minutes. Some of them have won hundreds in trotting matches, and have sold for a thousand guineas each." In England they almost invariably go under saddle, but with their fine showy action, blood-like appearance, and good bottom, there is no reason why they and their grades should not in this country prove equally valuable as carriage or general purpose horses. The valuable race of French coach horses derive much of their blood from these English road horses. Hackneys are a novelty in this country, but several enterprising American breeders have recently introduced choice stallions of this breed, and they will doubtless find speedy recognition as a valuable acquisition to the horse stock of the country.



A PURE-BRED HACKNEY STALLION.

GOOD RULES FOR RIDING AND DRIVING.

When the horse is taken out for either riding or driving, it should not be allowed to move at a fast pace for the first mile or more, otherwise, as its stomach is then full, it may injure its wind and bring on the heaves. A good rule to observe before putting the horse up to a fast gait is to let it dung three times. This relieves the bowels to a moderate extent. If necessary to stop when out, and a cold wind prevails, put the horse under cover and blanket; if one is not to be had then hitch on the lee side of some building. If in summer, put in a shade as clear from flies and mosquitoes as possible; if there is no net cover with a cotton sheet or light blanket. The best strap for hitching is one that buckles round the neck, as it holds more securely than a halter or bridle rein, which are liable to be slipped. In crossing a river or bay in a steamboat or other conveyance in cold weather, or facing a raw or strong wind on the road, hang a short thick blanket from the neck spread in full breadth over the chest, to guard from taking cold. When the exposure ceases, remove it. Returning home from a ride or drive of some extent, and the horse is sweaty, let the last mile be done slowly that it may be cooled a little before reaching the stable. Some blanket as soon as the harness is taken off; others contend that it is better to rub as dry as possible and then blanket. But which may be preferable will depend something on the weather and the nature of the horse, whether to dry quickly, or to sweat longer and copiously. If the feet and legs are muddy, some prefer to let the mud dry on before cleaning, and then it is easily rubbed off; others wash it off immediately. The objection to this in cold weather is, that the groom is apt to neglect wiping perfectly dry after the washing, and in consequence stiffness of the limbs or rheumatism may follow.

Examine the shoes, and if gravel or any hard substance has got between them and the hoofs, pick it out. During this time, the horse may safely take two to four quarts of water, at a moderate temperature if in summer, and warmer if in winter. After being well cooled give all the water the horse will drink. Now wait a short time and then feed a little hay at first, after which his ration of grain or meal. Never let a horse stand or wade in water when he is hot, as it would endanger foundering him unless the water is quite warm, and perhaps even then. If ever forced to do this, exercise him well after it, and when stabled, rub the legs thoroughly dry down to the hoofs, then he would probably escape founder. A. B. ALLEN.

HIGH-PRICED HORSES.

It is estimated by very good authority that the value of the horses lodged during the past winter at Coney Island, Gravesend, Jerome Park, and Monmouth Park, the four racing grounds contiguous to New York, was $1,750,000. Exactly how many horses were stabled at these places we cannot say, but probably from one to three thousand, which would give a value of $1,750 each for one thousand horses, $875 each for two thousand, or about $580 for three thousand. These horses all belong to racing studs, and are of course held at a high valuation; but to show what prices good horses bring we may mention two sales in New York during the month of March. At the first sale, forty-four horses sold for $19,985, an average of $455; one horse brought $3,700, another $3,100, another $1,700, and three $1,000 each. The next day fifty-nine horses were sold for $29,270, an average of nearly $500. At a recent sale in England, at Newmarket, the appraisal of the entire list sold was placed at $400,000, but the auction realized nearly twice that amount. One horse sold for $9,250, two for $3,500, one at $9,000, one at $6,250, another at $5,000, another at $3,000, while the sale closed with one horse for $17,500, and another at $12,500. These figures are somewhat larger than those obtained at the New York sale, but they simply point out the value of carefully reared and trained horses, and indicate to the farmer the importance of being particular in regard to his farm animals.

Mr. Bonner twenty years ago paid $35,000 for "Dexter," who has recently died; for Maud S. he paid $30,000. Indeed sums ranging from $10,000 to $30,000 have not been infrequently paid for horses in late years. A fire in April, in California, destroyed seven horses. Four of these were valued at $31,000, and the remaining three were worth half as much more. Some of the finest horses have been the "chance" animals bred on farms. No one can foretell the possibility of the colt that frisks away his young life in the home pasture. There may be "millions in it." The prices we have given emphasize the position in the article on page 163 of the AMERICAN AGRICULTURIST for April, in which the importance of enumerating in the Census all the horses in the country is dwelt upon, and figures are produced which show how large a portion of the national wealth is omitted, because attention is not paid to the horses, cattle and swine "not on farms." The report of the Agricultural Department gives the average valuation of the horses of the United States at $71.27, an aggregate of something more than $860,000,000. Now as there are not less than 2,500,000 horses "not on farms," owned in towns and

cities, and used for professional and commercial purposes and in transportation, if these had a valuation only of $100 each, there would be $250,000,000 added to the national wealth, and if they were worth $200 each, or $300 or $400, the figures would rise in the same proportion until they would form an aggregate of the very highest importance.

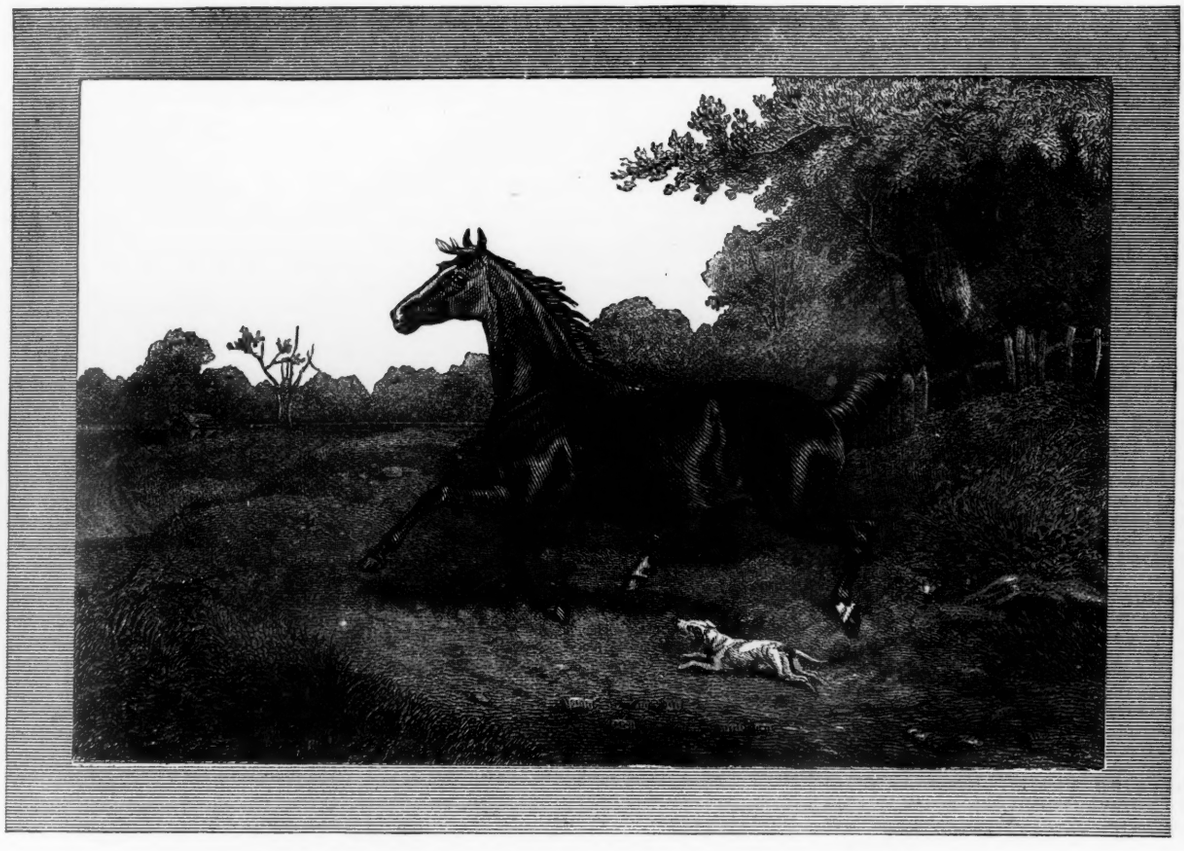
THE FIT OF THE HARNESS.

R. F. COLWELL, R. I.

To say that the ordinary horse owner does not attend to the fit of his harness, is only the expression of a well-known truth, and the most sceptical needs only to examine a few harnesses on work horses to find out for himself. On a draft-horse the collar is perhaps the most important piece, and its misfit is the fault alike of the harness-maker and the buyer. The necks and shoulders of no two horses are alike, and the bony framework and the muscular coverings need both care and discretion in the fitting of a collar, or galls on some place where the collar pinches, or trouble in breathing from narrowness or shortness, will be the inevitable result. The collar should be just long enough to rest against the lower edge of the shoulders, with such a curve as will allow unhindered breathing. On the sides, the bevel or roll of the leather should fit the surface on which it rests smoothly and evenly, and if it does not so fit, the hair that forms the stuffing should be taken out and repacked until the desired shape is reached. At the top two strong straps and buckles should fasten it, as most horses object to pulling the collar over the head, and the shape is more or less changed by such usage. At night and at noon, when the team is brought up to be fed, the collar should be removed, lightly sponged with castile or ivory soapsuds, and wiped dry with a piece of soft cotton cloth. This will greatly help in keeping the neck and shoulders in good condition. Bathing the shoulders in salt water before the spring work begins, or the first three or four days after it is begun, may help harden, if the horse has been idle much during the winter. If one is sure that a collar does not satisfy the above requirements, the best possible use to make of it, is to hang it up till some other horse is bought whose neck it will fit.

The hames should fit the collar, and be strapped to it so as not to work up and down; but care should be taken that they are not so tightly buckled as to make the collar narrower than it naturally would be. The traces should not be fastened too high up on the side, or the whole draft will come on the upper part of the neck. Chains are used for traces by many, but should always be covered with soft leather or good strong sheepskin, wool side out. If the trace is at the right hight, the girth so commonly used will hardly be necessary, but can of course be used if thought best. It is little enough that one can do, for a horse that is willing to do his best every day, that the harness should be made as comfortable as possible.

The bridle should be long enough so that the bits do not cut the horse's mouth, or indeed irritate him. No check should be used, unless to keep the head up when standing in a field. The top of the head-stall should be covered with sheepskin if the hair is noticed to be worn off at all. The writer has often wondered why no more sheepskin is used by farmers. One sees it on carriage horses and on livery stable rigs, but there it is used mainly for ornament; but where it could be of most service, and where it would practically cost nothing, it is rarely used. No care taken about a horse or about cattle is ever wasted, and the condition of stock is an exact measure of the owner's interest in it.



A HACKNEY MARE ENJOYING HER LIBERTY.

Hints on Shoeing.—Do not let horses' shoes remain over three to six weeks, dependent on the amount of use and the toughness and growth of the hoofs. Each time after taking off the shoes, if the road permits, let him go barefoot as long as no injury follows, as this expands the hoofs and keeps them in more perfect condition. Some horses can be used barefoot, off pavements, for months, or the whole year round, and work better than if shod. Never allow the frog of the foot to be cut out or trimmed, unless somewhat ragged, and then only a very little, as it acts as a cushion to the foot and lessens or even prevents bruising when striking a stone or other hard substance. See that the hoof is not pared beyond absolute necessity, and that the shoe is properly fitted to it, and not the hoof to the shoe. Do not allow the bottom of the hoof to be burnt or even scorched with a hot shoe, in order to make it set evenly, but pare it properly to do so. Always use the lightest shoes compatible with the condition of the roads and the work required of the horse.

OUR BASKET.

Clubs can at any time be increased by remitting for each addition the price paid by the original members; or, a small club may be made a large one at reduced rates, thus: One having sent 5 subscribers and $6.00, may afterwards send 5 names more and $4.00, making 10 subscribers at $1.00 each; and so for any of the other club rates. Subscriptions can begin at any time, as every number of the paper is complete in itself.

Bound Copies of Volume 46 (for 1887), uniformly bound, in cloth, gilt backs, will be furnished at this office for $2. If sent by mail, $2.30. We can usually supply at same rate any of the previous volumes, that is, volume 16 to 46 inclusive.

Teosinte in Iowa.—J. F. Mourer, Crawford Co., Ia., writes us: "I have tried Teosinte here. It yields an immense amount of feed, but shows no signs of seed in the fall when killed by frost. Cattle eat it with great relish, and if seed can be had cheap enough, it will pay well to raise teosinte for green feed."

Remedy for Ants.—J. W. Dobbins, Beaver Co., Pennsylvania, writes us that he has found Tartar-emetic an effectual and positive remedy for ants. Mix a few cents' worth of the drug with sugar, honey, or molasses, put in a saucer, and set in the infested place. The ants will abscond in a very short time.

Ground Squirrels.—James A. Girard, San Luis Obispo Co., California, asks for some means of checking the depredations of ground squirrels. Great expense and labor are incurred in killing them by means of poisoned wheat and other things. If any of our readers know of any better method of exterminating the troublesome little animals we would like to hear from them on the subject.

Feeding a Cow.—Allen Garber, Philadelphia Co., Pennsylvania. Any one keeping a cow within easy distance of a large city can generally obtain brewers' grains and malt sprouts at rates which render them very economical food for a cow. A peck of fresh grains morning and night, with a few pounds of hay in the middle of the day, will be sufficient for a cow of average size. Bran, with about one-fourth its bulk of cotton-seed meal, is also a good food with a little hay.

Dehorning Cattle.—Messrs. A. W. and W. F. Wing, Pueblo Co., Col., write us that after mature study they decided to remove the horns from their Jersey herd. They used a fine, narrow saw, like the saws used by retail butchers. The cow was thrown to her side, the head secured, and the horns quickly sawed off near the base. Some of the cows bled very freely, in which cases a tarred rag was bound on the stump. Not one missed her feed or shrunk in milk. They add: "Let us say, do not buy any patent appliances for dehorning, as they are not as good as a common butcher's saw."

Wire and Picket Fence.—G. E. Hammond, Lawrence Co., Tenn., writes us that he uses, with gratifying success, the method of building fence described and illustrated recently in the AMERICAN AGRICULTURIST. He modifies it slightly, however. After the wires are drawn taut, he detaches the rope from the wheel, and lays one end of a long plank on the wheel, the other end resting on the ground. This holds the wire in position, and yet allows the wheel to yield gradually as the wire is taken up by the pickets. If the plank is not heavy enough, he loads it with stones.

The Arkansas Fruit Region.—A. C. Bates, Parke Co., Ind., writes us: "The southeastern slopes and valleys of the Ozark Mountains are an excellent region for apples and pears. The mountains act as a windbreak to the northwest winds, and when the trees bloom spring has come to stay. The rainfall is about thirty-eight inches, but evenly distributed. Rivers and brooks are abundant and constant. The civil war set back fruit-growing there twenty-five years, but it is now reviving rapidly. Apples mature well, and it is not uncommon to find in June fine solid Rambos and Belleflowers. Disease and injurious insects appear not to have found out yet the fruit here. While fruit-growers are rushing to the extreme borders of our country, would it not be worth while to take a look at these protected slopes with their beautiful climate?"

Plum Trees and Grapevines.—John Wood, Worcester Co., Mass., writes us that he sows around the roots of his plum trees two quarts of salt to each tree. The usual way is to sow the salt on the snow early in spring. The salt is supposed to benefit the trees generally, and especially to protect them against black knot. He also thinks the additional vigor imparted to the tree by the absorption of the salt in the sap is favorable to increased fruitfulness. Mr. Wood also writes that he hangs a wide-mouthed bottle filled with sweetened water to the top of each stake in his vineyard, as traps in which to catch the various insects which infest the grapevines. These traps, however, prove futile against the rose-bug, and kill useful as well as destructive insects.

Killing Prairie Dogs.—Richard Whinnerah, of Ouray Co., Colorado, wishes to know what poison will kill prairie dogs, and how it should be administered. He says prairie dogs grow fat on arsenic and strychnine, and that the application of these poisons is without result. When animals grow fat on arsenic, it is because the poison is carefully administered in small doses, gradually accumulating as the creature becomes accustomed to it. It is just possible that the Colorado prairie dogs are too smart to eat freely of the drugs that are prepared for them. If our correspondent and his neighbors will make sure that the prairie dog has a full dose of arsenic or strychnine, we would be willing to guarantee that his career will soon come to an end.

Tree and Other Labels.—"Passaic," N. J., writes us: "There is probably no garden appliance about which so much ingenuity has been expended as the label. With a wide experience in tree and shrub labels, I have found nothing equal to those of sheet zinc of the shape shown on page 145, in April last. Instead of punching the names in dots, it is much quicker and easier to write with a lead pencil. I can't say that the pencil writing will last as long as the other, as a *hole* is very durable, but it lasts twenty-five or thirty years, which is usually long enough. For garden labels I am now trying stakes of Southern cypress, the name painted in black, in letters large enough to be seen without stooping. For two seasons they have given satisfaction."

Restoring Land.—S. B. Morris, Ontario, writes us that he has several fields of light, sandy loam, resting partly on sandy and partly on clay subsoil. The land has been much exhausted by continuous cropping without manure. Barnyard manure can only be had in limited quantities, but leached ashes and lime are plenty, and there is an abundant deposit of swamp muck on the farm. With these fertilizers, and the addition of a little special manure, the land can be brought up without barnyard manure. The muck may be hauled out either in the dry time of mid-summer, or while the ground is frozen in winter, composted with lime and ashes, and plentifully applied. The addition of a little bone-dust, or an occasional subsequent dressing with superphosphate, would be very advantageous.

Introducing New Potatoes.—E. L. Benedict, Morrow Co., Ohio, writes us: "I would like to ask through 'Our Basket' what is the best course to pursue to reap some profit from a new potato of excellent eating quality I have developed." The era of reaping fortunes from new varieties of potatoes is past, there are too many good ones already in cultivation to make this possible. Nevertheless the ideal potato, which has all the desirable good qualities and no defects, and is disease and bug-proof, has not been found yet. The best way to make money from a new variety of potato or any other vegetable is to enter into negotiation with some reliable seedsman who makes a specialty in this line. If, after sufficient trial, the variety proves superior to any already in cultivation, he will find it to his interest to make you a good offer for your stock.

Wild Rice.—S. H. Tegley, Berks Co., Pa., who wishes to raise wild rice in his carp ponds, has tried seeds of the Wild Rice (*Zizania aquatica*) from several quarters, and could not get any to germinate. It is probable that the seeds of this grass, like those of many other perennial plants, including trees and shrubs, unless sown as soon as ripe, will not germinate until the following year. We should try last year's seed by sowing it in a box of earth, and place the box with its edge just at the surface of the water, to prevent turtles and other aquatic animals from digging among and scattering the seeds. Take care that low water does not leave the box dry, and secure it from damage, but where it may freeze and thaw during winter. We think seeds so treated will grow the second spring, when the seedlings may be transplanted. If seed can be had as soon as ripe we should sow it in a pot or box, the soil of which should be kept very wet. If the plants come up, remove the pot or box to the house or a light cellar, where the earth can be kept from freezing very hard, and yet not be too warm, until spring, when they may be transferred to the pond.

Lime as a Fertilizer.—James S. Relly, who fails to give his address, asks about the use of lime as a fertilizer. Lime has been applied to land as a fertilizer ever since the days of Roman empire. Yet its manner of action and real value have never been definitely settled. It seems to act chemically in changing the physical character of soils and also in hastening the decomposition of vegetable matter. It liberates certain constituents of vegetable growth in the soil, and also forms compounds which attract beneficial gases from the atmosphere. It is useless to apply lime to land which is wholly deficient in the elements of fertilty, nor should it be repeated oftener than once in six or seven years. It is best sown broadcast, when freshly slaked, in the form of powder.

Land Plaster.—James Stearns, Lee Co., Iowa. Land plaster contains no manurial constituents, except the lime, which forms a little less than one-third of its weight. It acts indirectly as a fertilizer on some soils, by rendering available certain inert materials already in the soils and by fixing the carbonate of ammonia. Two hundred to three hundred pounds per acre would be about right for soils deficient in lime. On any other, the plaster would be valueless. The relative value of different brands depends upon their comparative purity. As a general thing it is better to use a cheap home article, provided it is pure, than to pay heavily for a far-fetched one. Grossly adulterated and fraudulent stuff is sometimes sold in the West as land plaster, and it would be well, before buying in any considerable quantities, to send a specimen to the State Experiment Station for analysis.

Plenty of Vine, no Tomatoes.—J. T. Meline, Ford Co., Kan., writes us that he last year set out tomato plants upon a "sodbreaking." The plants grew vigorously, some were eight to ten feet high, and bloomed profusely. A portion of the plants were pinched back, removing great quantities of vine, but neither upon the plants that had been pinched, nor upon the others, did any fruit appear. By the time the frost killed the vines, they had on them many green "nubbins." Our correspondent naturally wants more fruit and less vine this year. Nothing is said as to the variety grown, but the result would probably be much the same with any variety. The plants were set upon soil that did not suit them. When fairly good pasture land is taken up for a market garden the soil is not suited to the best crops of the finer garden vegetables until it has been cultivated in potatoes, corn, and other coarse crops for a year or two. Much less should we expect to find a newly turned prairie to be suited to the tomato, a plant that has been under the highest cultivation and in artificial conditions for so long. Try older soil, that which has been under hoed crops for some years. It may also be well to try different varieties, to ascertain which are best suited to the locality.

Superphosphate of Lime.—"Subscriber from Virginia." Superphosphate forms the basis of nearly all the fertilizers now manufactured in this country. Phosphate of lime, as it exists in bones, is nearly or quite insoluble in water. The chemists call it the tri-basic phosphate, because it consists of three atoms of lime and one atom of phosphoric acid. What is known as superphosphate contains one atom of lime and one of phosphoric acid, and the chemists call it mono-phosphate. To convert the tri-basic phosphate into mono-phosphate enough sulphuric acid is added to take away the two atoms of lime and convert it into sulphate of lime or plaster. The mono-phosphate is soluble in water, while the tri-basic phosphate, as it exists in bones and mineral phosphates, is insoluble in water. The object of treating the bone or mineral phosphate with sulphuric acid, therefore, is to render the phosphate soluble, so that it can be readily taken up by plants. The value of superphosphate of lime is in proportion to the amount of soluble phosphate of lime that it contains. Manufacturers frequently add potash and some form of nitrogen to the superphosphate, and in estimating the value of the mixture, the value or cost of the potash and nitrogen is taken into consideration. There are many farmers who prefer to buy a plain superphosphate to which no nitrogen or potash has been added, and if they wish nitrogen or potash they can buy it separately.

How to Get the Report.—A subscriber who gives neither name nor address inquires how he can get a report of the Department of Agriculture. He can procure this by writing to his Member of Congress, provided he is not too late for the distribution of the copies, of which the Member of Congress has had the disposal.

Duty on Wheat in Europe.—In Great Britain, Russia, Denmark, Belgium, and the Netherlands, there is no import duty on wheat. In France and Italy the duty is twenty-six cents and a fraction on sixty pounds. In Spain, twenty-two and a third; in Sweden and Norway, eighteen and a half; in Germany, thirty-three; in Austria and Hungary, nearly twenty—say nineteen and four-fifths.

Salt, Ashes, Plaster.—E. Worthington, Ontario, asks us whether wood ashes and salt or land plaster would be preferable for meadow land. Unleached wood ashes, at the rate of ten to fifteen bushels per acre, with one bushel of salt for every ten of ashes, make an admirable top-dressing for grass and clover, and would produce a more decided and permanent effect than plaster.

Farm Machinery in Cape Colony.—A letter from the editor of the "Wynberg (South Africa) Times" informs us that farming has taken a favorable turn in that region, and that labor-saving machines and appliances are coming into use. Here is a promising field for the dealers in agricultural implements. Cape Colony has recently established an Agricultural Department, with Prof. Fisher at its head.

Plaster.—R. E. Pancher, Marathon Co., Wis. Plaster of Paris and land plaster are only different names for the same article—gypsum—which is chemically sulphate of lime. The most important deposit known is near Paris, in France, hence the name Plaster of Paris. Strictly the term land plaster is applicable to the raw ground gypsum, and the other term to the calcined article, but in common practice the names are used indiscriminately.

New Zealand Butter.—New Zealand aims to be the butter market for Australasia. It has a suitable climate, good pasture and the almost certainty of successive favorable seasons, but for some reason the colonists have fallen behind in the Melbourne market. No sooner did they discover this result of their own heedless methods of making and shipping butter, than with characteristic enterprise they set out to improve the situation. At Auckland there is a creamery with the modern appliances, and butter is made there that commands a big price in Melbourne and Sidney, and goes far to restore the good repute of the New Zealand dairies. It is proposed to have a traveling dairy to itinerate among the agricultural fairs and exhibitions, and in a practical manner instruct the people in the best methods of making good butter. Nothing can surpass the "object lesson" as a means of education.

Room in Wisconsin and Michigan.—S. D. Flint, Adams Co., Wis., who has just returned from an inspecting tour through several Southern and Eastern States, in search of a home, writes us: "There is plenty of land in Central and Northern Wisconsin, which can be had cheap. The reason for this is plain. During the 'Hurrah for Kansas' period the tide of emigration flowed into the Western Territories, passing by the sparsely settled States that contained an abundance of good land. Most of this land came into the hands of speculators who are now getting tired of holding it and paying taxes on it. But the permanent residents have meanwhile improved their farms so as to make not only their own land valuable but that of the non-residents also. No region between the Rocky Mountains and the Atlantic is more exempt from sudden changes of the weather than Central Wisconsin. When winter weather sets in it remains cold till spring. Never a blizzard nor a cyclone."

Nitrate of Soda and Guano.—H. Morgan, Dinwiddie Co., Va., asks us: "What is nitrate of soda? Guano we know is a natural product, but we suppose nitrate of soda is compounded by the manufacturers of commercial fertilizers." In one sense nitrate of soda is as much a natural product as guano. The old-fashioned Peruvian guano was found in the rainless regions of South America. It was the droppings of birds living on fish, and, of course, very rich in nitrogen. But the supply has been exhausted for several years. The guano we get now is either a manufactured article or it comes from places where it has been exposed to the rain and a large portion of the nitrogen is washed out of it. Nitrate of soda is obtained from the west coast of South America. The region where it is found is without rain and without vegetation. It lies in beds from one to sixteen feet in thickness. The accepted theory of its formation is that it is produced from sea-weed; the sea-weed decomposes and its nitrogen is converted into nitric acid, which unites with the sodium in common salt. It is very soluble, but there is no rain to wash it away. Enormous quantities of it are used as a fertilizer in connection with superphosphates in Germany, France, and England, but as yet it is seldom used in this country.

South African Agriculture.—That the AMERICAN AGRICULTURIST should have large subscription lists among the farmers of South Africa indicates an advanced state in the agriculture of that country, but the perusal of "The South African Agriculturists' Almanac for 1888," gives a better knowledge of details than we could otherwise secure. This so-called "Almanac," over two hundred pages, is only occupied in very small part by the calendar, but contains articles, mostly original, of which any country might be proud, and advertisements which are full of interest and instruction. One can in no way better learn about a community, than by reading what is offered to its members to buy, and what is offered by them for sale. The book stores offer a list of agricultural and similar works, comprising the best of England and this country.... One house asks for consignments of ostrich feathers....We learn that Cape Town has a "White House," which, instead of being an "Executive Mansion," offers "Home Comforts," and is a hotel....The Singer Sewing Machine Co. have branch establishments in several of the towns....The articles published in the Almanac are of excellent character, practical, useful, and up to the time. Among them are articles and treatises on: Colonial Dairy Farming, including the use of the Centrifugal Cream Separator; Diseases of Domestic Animals; The Olive and its Products, with descriptions of over twenty varieties of the olive; South African Horse Breeding; Permanent Pastures; Kitchen and Flower Garden; Ostrich Farming; Sheep Dipping; Packing Fruit; The Jersey Cow and its Crosses; The Value of Manures (excellent); The Prickly Pear (as a weed); The Scotch Collie; Tobacco Growing, and a number of excellent brief articles.

Reclaiming a Swamp in Michigan.—J. A. Robinson, Calhoun Co., Mich., writes us: "I have a piece of swamp land which I have commenced to reclaim. It was apparently once a lake. The muck in some parts is more than ten feet deep, and seems to be very rich in decayed vegetable matter; but I think it needs a little specific manure, and I would like your opinion as to what I had better apply. After getting some open ditch for an outlet, I commenced tiling three feet deep. Water runs in the tiles the year around from springs in the edge of the hard land. In the fall of 1886, we plowed some of it; let it lay in the furrow until spring, then worked it with a disk-harrow. It worked up very mellow. We put in half an acre to onions, and the remainder to corn. The whole season of 1887 was very dry until August, when we got some rain. The onions were dressed with a little home-made fertilizer and made a fair crop. The corn was top-dressed with ashes and made a good crop, while corn on the upland was a failure. A neighbor adjoining had some of this same swamp to onions, which made a fair crop without any fertilizing, but they were later in ripening than ours, which we attribute to his land not being so well drained. It had open ditches about two feet deep, while ours was tiled three feet deep. Having been a subscriber of the AMERICAN AGRICULTURIST for more than a quarter of a century, I think I need no apology for addressing you."

Certainly no apology is necessary. We are always pleased to hear from our readers. And we are specially interested in the practical experience of those who are draining and improving swamp lands. There is no doubt in our mind that our swamp lands, when drained, especially in our dry, sunny climate, will prove mines of fertility and sources of wealth. On such land we should expect a better crop of onions the second year than the first. It takes some time for the muck to feel the full effects of the draining and the aeration of the soil. For onions, the best fertilizer would be three hundred pounds of superphosphate and three hundred pounds of nitrate of soda per acre, sown broadcast at the time of sowing the seed. For corn, if anything is needed, we think two hundred pounds of superphosphate per acre would be more profitable than any other fertilizer, applied in the hill at the time of planting. On such land we have found one hundred pounds of superphosphate and one hundred pounds of nitrate of soda per acre, drilled in with the seed, a very profitable application for beets and mangels. The same dressing, sown broadcast, is also excellent for carrots and parsnips, though they will stand a heavier dressing of nitrate of soda if it did not cost so much! Costly as it is, however, it can often be used with considerable profit.

Animal Ailments.

Milking before Calving.—C. H. Van Blarcom, Orange Co., N. Y., has a heifer due to drop her first calf July 26th. Her udder seems well developed and supplied with milk, and if milked would average nearly a quart per day. Information is desired whether it is best to milk her or let nature have its course. If the animal is perfectly well, and the udder is soft, we should not advise to milk her before she has dropped her calf, but if the milk causes her any inconvenience, or if it flows naturally, it is far better to milk her once or twice a day.

Injured Teat.—H. A. Buffum, Walla Walla Co., W. T., has a valuable cow which a short time before calving, in passing through a wire fence cut her teat nearly the entire length, laying it open clear to the milk duct. It has healed up all but a small hole big enough for the milk to leak out. The opening at the end of the teat is in its natural condition. Advice is asked as to the proper treatment. So long as the cow is in milk it will be difficult to effect a cure. When the flow of milk has ceased, the skin around the fistula should be carefully cut off with a very sharp knife, at the same time enlarging the opening by a small cut on each side lengthwise, and then sewing the wound together.

Sun Scald in Pigs.—This affection of the skin, while trifling in itself, should be promptly attended to. It is an ailment chiefly of young pigs, or thin, silky-skinned hogs, and is caused by too sudden exposure to hot sun and high winds. The newly-born pig, exposed to direct sun, without any shade for protection, is very apt to have its skin crack and blister, followed by inflammation which is not only annoying to the animal but will often stunt its growth seriously. After a day or two the skin along the back and on the ears has a rough, scabby appearance that is sometimes mistaken for mange or itch. All that is required in sun scald is to protect the pigs from sun and wind and to rub their skin with sweet lard. If a litter becomes affected it is a good plan to keep the under-sides of the sow well greased, as this is more easily done than to catch and grease the young pigs separately. If the affection does not disappear in a few days, a few drops of carbolic acid may be added to the grease applied.

Black-Leg in Calves.—W. R. Paslay, Klikitat Co., W. T., writes us: "There are many cattle raised in this section, and stockmen lose a great many calves annually from black-leg. Most of those that die are range cattle and are very fat. What is the cause, and is there any preventive and cure?" Black leg, or Anthrax, is a constitutional and contagious disease which shows itself in many different forms. Young and rapidly growing animals, as well as those that have been reduced in health by overwork or unsuitable treatment, are most predisposed to the affection. The most effectual preventive measure is a change of pastures. The animals must have plenty of fresh water, and moderate exercise is beneficial. Saline cathartics may be given, and bleeding is recommended. When sloughing takes place caustics should be applied, and in some cases actual cautery may become indicated. Tonics and muriatic acid in two-ounce doses two or three times a day, given in the drinking water, are the principal medicines to be recommended. Neither the meat nor milk of affected animals should be used. The carcases should be buried and thickly covered with quick-lime, and fields in which animals that have died from anthrax are buried should not be pastured for two or three years.

Blind Staggers in Sheep.—W. B. Saville, St. Clair Co., Mich. This disease, which is also known as "gid" and "turn-sick," is caused by the presence of the embryo or cystic form of the gid tapeworm of the dog in the brain and spinal cord of sheep. This parasite has an alternate or dual generation, requiring two animals for its complete development. Eggs of the tapeworm living in a dog's intestines may become deposited on grass in pastures and be swallowed by the sheep, or they may come into its stomach by drinking water from ponds or streams to which dogs have access. The eggs soon hatch in the sheep's stomach, and the minute embryoes bore their way into the tissues of the animals in various directions. Some penetrate the spinal cord, along which they travel until they reach the brain. Here they become encysted, grow rapidly, and cause the various symptoms of this disease. Young animals are more frequently affected than older ones. Spontaneous recovery is rare. If the dead sheep are devoured by dogs some of these parasites will come into their intestines, where they will develop into tape-worms, and thus complete the circuit. The only effective treatment consists in cutting out the parasites. As a preventive measure all sheep which have died from this disease should be buried so deep as to be out of the reach of dogs, all strange dogs should be kept from the pastures, and the water courses where the sheep drink should be carefully guarded.

ROAD-MAKING IN THE PRAIRIE STATES.

Throughout the great alluvial agricultural section of the United States the highways are mudways fully one-half the year. Good roads would be profitable, even though obtained at a large outlay. We have bad roads because we have too many of them and because labor and money are expended upon them unwisely. Laying out roads has been a mania. We have twice the length of highway needed, and we have not money and labor enough to repair properly the needed and needless highways; hence none are well repaired. Often the road overseers are unfit for their positions. They direct work in such a way that it occasions positive damage. The office of road overseer carries with it little money and less honor. Competent men find it more profitable to give their time to their own business. As a result, the overseer is usually a man who has no

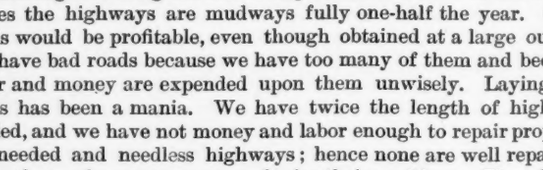


Fig. 1.—ROAD WITH TWO LINES OF TILES.

business of his own, and would be incompetent to manage it properly if he had. Many men who work well for themselves and their neighbors, think it fair to cheat the public by shirking when performing road labor.

If we would have better roads, the public must be made to see the benefits of them so plainly that men will consent to the closing of all unnecessary highways; that good men will accept the office of overseer; and that the road-tax be collected in money, that the overseers may hire only honest men, or contract for repairs, payment being conditioned on faithful performance. The disadvantages of bad roads, and therefore the advantages of good ones, are well recognized; very few understand, however, that improved roads enhance the property of a neighborhood. Frequently the appreciation in the value of the farms equals the cost of the improvements.

The best practicable country highway is made by grading the road-bed till it will drain well, upon this laying a stratum of small stones, and on this placing a stratum, at least twelve inches thick, of gravel or broken stone. But over a large area of the country, particularly the prairie regions, the scarcity of gravel makes its use in road-making out of the question. In the prairie States the soil is peculiarly adapted to making impassable roads. Plank pikes are unsatisfactory—too expensive to construct, and needing too much repairing. In many places the road-beds have been graded up with machines for the purpose, or with road scrapers, and ditches cut at the sides. This surface drains the road-bed and also gives outlets for drains from the fields. But while it is beneficial, it is not enough. The roads are yet dirt roads, and frequently become impassable.

In some places underdraining the road-bed has been tried. The manner of laying the tile is shown in the cross-section of a road-bed, figure 1. The road-bed is leveled, the tile laid in shallow ditches,

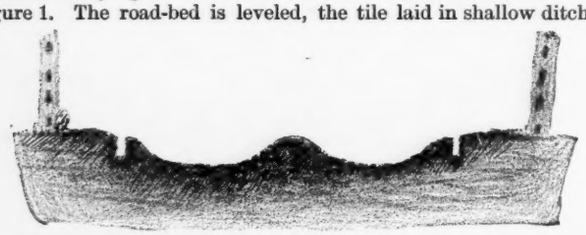


Fig. 2.—WORN-OUT ROAD-BED.

and then earth, brought from the sides, is placed on the road-bed until the tile are three feet under ground. Bringing the earth from the sides also makes ditches into which the surface water finds its way at once, and that which sinks into the ground finds its way into the tiles. The road-bed must be kept in good repair. Travel is apt to wear it, as shown in figure 2, and then it will soon become muddy, the water being held on the surface. The results from this system of road-making have been quite satisfactory. It is probably as good as an earth road can be made; and this plan can be recommended where stone and gravel cannot be had. The outlets must be closed against small animals by cementing narrow iron bars against the end of the tile. Where gravel can be had, but the supply is scant, graveling and underdraining can be combined with happy effect. On an underdrained bed, a layer of gravel six or eight inches thick will answer, as the tile will take the place of the stone and the gravel will have a dry, solid foundation. Underdraining does better in sandy or loamy soils than in clayey ones. It is of the greatest benefit in "seepy spots," transforming such places, almost impassable during a good part of the year, into dry, solid stretches.

HOW TO HOLD THE REINS.

BRIDOOM REINS.—The upper one of the Bridoom reins, *a*, should lie across all the fingers, as shown in the illustration, and turn downwards over the first two fingers and then turn back and pass downward between the second and third fingers, and when the hand is closed upon the reins and the ends of the fingers, with the first joints bent, pressed hard against the ball of the thumb and palm of the hand, the thumb joint should form nearly a right angle, and the end of the thumb and nail should be pressed hard and sharp on the reins as they lie across the second bone of the first finger. The thumb in this position is a binder on the reins, and keeps them from slipping through the fingers in case of a sudden pull or stumble of your horse. To guide the horse to the right, turn the hand to the right (as if turning a corkscrew with the hand) with the fingers down, this tightens the right rein. To guide the horse to the left, turn the hand to the left (as if unscrewing a corkscrew) fingers upwards, this draws the left rein and the horse goes to the left.

CURB REIN.—The narrow or curb rein straddles the third finger, and is thrown across the first joint of the first finger, where it is bound by the end of the thumb and nail in the same way that the Bridoom reins are, the thumb playing alternately on them as required, and in pretty much the same way as the fingers play on fiddle strings. In turning the hand to the right or left, the whole hand should be moved to the side opposite to the one the horse is to go, but only two inches or so, according to the fine quality of the horse's mouthing. If the horse does not go as desired, he is either not well mouthed or the reins are not handled properly. In thus using the reins all the motions and actions of the hand and fingers are almost imperceptible.

HOLDING THE REINS.

J. C. BATTERSBY.

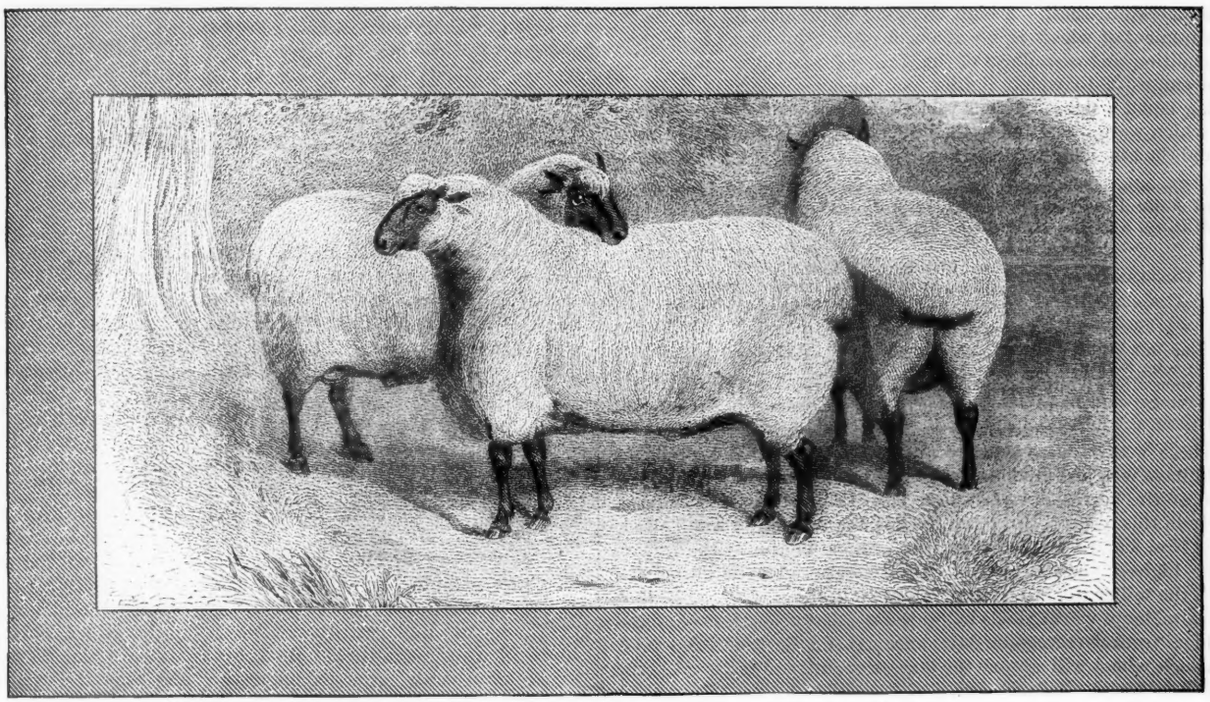
PETROLEUM IN RUSSIA AND THE UNITED STATES.

The export of illuminating mineral oil from the United States has advanced with great steadiness from 12,791,000 gallons valued at $6,764,000 in 1864, to 481,000,000 gallons valued at $37,000,000 in 1887. Including crude oil the total export last year was $46,825,000. The quantity exported has increased forty-fold in the twenty-four years, while the value has decreased from nearly fifty-three cents a gallon to less than eight cents. The decline in value has been precipitated by improved and cheapened methods of producing and manufacturing the oil, by the action of vast combinations of capital, and by the competition of Russia in the markets of Europe. The oil wells of Russia are near Baku on the Caspian Sea and below the Caucasian range of mountains that stretches out westward to the Black Sea. These wells began to be felt as a disturbance in the oil market as early as 1870, and by 1883, when the railroad was opened across the divide between the Caspian and the Black seas—a distance of nearly five hundred miles—the shipments to other states in Europe were at once enlarged from three hundred to four hundred per cent. The production in 1883 was of naphtha 2,160,000,000 pounds and of petroleum 513,000,000 pounds. Since the latter year the production has increased with marvelous rapidity, and the Russian product has driven American oil out of the Russian market, and has greatly reduced our export to Austria and Turkey. A determined effort was made to expel our oil from Germany, and the Russian article was put up in American cans with American brands. The interest that the American people, outside the "petroleum kings," have in this oil question is stimulated by the fact that a concession for a pipe line has been granted by the Russian Government to connect the oil fields of Baku with the shipping port of Batoum on the Black Sea. The line will be a little less than five hundred miles long and will overcome one elevation of eleven hundred feet. The completion of this pipe line will cheapen the Russian product considerably and enliven the competition with the United States.

OXFORD DOWN SHEEP.

The Oxford Downs, of which a fine group is shown in the accompanying illustration, are the most recent of the so-called "mutton" breeds of sheep. It is a "made-up" breed, having been produced by crossing the Cotswold with South and Hampshire Downs. The first of this cross-breeding was by English farmers with no thought beyond the immediate result of producing heavy lambs and sheep for the market. But skillful and observing breeders noticed among these cross-bred flocks many superior animals, and they undertook by careful selection and breeding to produce a class of sheep which should combine the great weight of the Cotswolds with the fine quality of the Downs. These efforts were eminently successful, and the type became permanently fixed. In 1862 the Royal Agricultural Society, conservative as it is in regard to claims of new breeds, fully recognized the Oxford Downs as a distinct breed, and made a class for them. Something over ten years later, they became known to some extent in this country, the famous Oxford ram "Freeland" having been hired by T. S. Cooper of Pennsylvania, at a cost of four hundred dollars the season. In 1876 a flock of Oxford Downs exhibited at the Centennial, in Philadelphia, attracted the attention of American breeders and created a lively interest in the hitherto little known breed. Several enterprising breeders visited England for the purpose of securing choice rams and ewes, which they imported. The increase of the Oxford interest in this country has been steady and rapid ever since, notwithstanding the depression in sheep husbandry generally. The American Oxford Down Record Association has been in existence some six years, and numbers in its membership enterprising promoters of the breed in various States from the Atlantic to the Mississippi.

The Oxford Downs combine in appearance as well as quality the characteristics of the Longwools and the Downs. Their faces are brown or gray, with a white or light gray spot on the end of the nose, poll well covered, with foretop, the legs are dark brown or smoky in color; they have broad full breasts with legs well set apart, deep full chests, broad back and loins, full quarters. The fleece is fine, thick and lustrous, weighing from eight pounds on ewes to as high as sixteen and twenty pounds on rams. The mutton is juicy, well marbled, but not so delicate and finely flavored as that of the South Downs. The ewes are prolific and excellent mothers. The lambs mature early, and command top prices in market. The sheep are hardy, and do well with good average care and feeding. These and other breeds of sheep which yield good mutton, as well as fair fleeces, are worthy the attention of farmers, especially when the success of wool-growing is made to depend upon political contingencies. No other sheep can take the place of the Merinoes as producers of fine wool, and for herding in great flocks on the Western prairies and plains. But the so-called mutton breeds seem to be eminently well adapted to the farms in the older parts of the country.



GROUP OF HIGH-BRED OXFORD DOWNS.

Engraved for the American Agriculturist.

SAVINGS BANKS, LOANS, AND THE FARMERS.

The returns of savings banks from California lead the list, the average being $788 for each depositor. In France more than two million depositors are credited with $503 each. In Rhode Island the average is $501; in Vermont, $361. New York has an average of $349, and New Hampshire $335; Massachusetts has $309; Maine $328, and Connecticut $255. France, as is well known, is one of the most thrifty countries in the world, and the saving habits of her laboring classes are remarkable. The large average shown by California is proof of the claim that is so often put forward for that State, that wages are as a rule higher there than elsewhere, and that the expense of living, particularly of food, is less than on the Atlantic sea-board, and that the climate is such that labor is employed during all the year. There are none of those long breaks in employment which occur in the States of the eastern and central parts of the Union. The grain fields are plowed and sown between November and February, then follows the care of orchard or vineyard, until the period of haying and harvest in May. This harvest period lasts along until it rounds out the year in October. The California Board of Trade has recently issued a most enticing circular in regard to the advantages of that State, and some of the leading points are included in what we have said above. The people of this country have such advantages of climate and soil, the productions are so varied and abundant, that every taste can be satisfied and every mode of life and habit of thought encouraged. From the Atlantic to the Pacific, and from the Lakes to the borders of Mexico, there is no end of places in which to live and thrive and be comfortable and prosperous. Farmers living near cities and towns where savings banks are established are among the number of permanent depositors. A statement made in regard to Springfield, Mass., is applicable to the whole country. In that city the "local farmers" have over $250,000 in the savings banks, and one agency for loaning, received from the farmers $25,000 in the first two months of the year. A savings bank is an excellent depository for funds, either permanently or until they can be placed in a secure loan at a higher rate of interest. In the *Indiana Farmer* we observe a scheme for the organization of "Farmers' Loan and Savings Institutions," by which farmers will be able to invest their savings near at home, and accommodate neighbors who want loans on their real estate. It is

the purpose to substitute the local capitalist for the remote money lender, whether an individual or corporation. In such a company the borrowers and lenders would be alike stock-holders, a fair interest would be paid, absolute safety could be assured; the control would be local and under the eye of those interested, and struggling farmers would be assisted toward the purchase of their homesteads. Such associations have worked well with the mechanics and clerks in the cities, and offer claims to the consideration of thinking farmers.

THE GROWTH OF WHEAT, AND ITS PRODUCTS IN THE MILL.—X.

JOHN J. WILLIS, SUPERINTENDENT OF LAWES AND GILBERT'S EXPERIMENTAL FARM, ROTHAMSTED, ENGLAND.

From numerous analyses of wheats it is evident that the samples of highest weight per bushel, and therefore usually most approved by the farmer and miller, are by no means those which are richest in nitrogen. The choice of the miller is directed to those samples which have the character of a perfectly developed berry, small, plump, and thin-skinned. But that the greater the weight of a bushel of wheat the more flour it will yield to the miller, and the richer it will be in albuminoids, must therefore be regarded as correct only within a certain limit. A high standard of weight for any given measurement of wheat is, no doubt, a good criterion as to dryness of condition and soundness of the grain; for any dampness in the grain causes it to weigh lighter per bushel, instead of heavier. Taking equal weights of four varieties of wheat of different hardness which were submitted to the miller, and the products analyzed, we find the following recorded results:

Table Showing the Quality as Indicated by the Weight Per Bushel of Four Varieties of Wheat, with the Percentage of Flour on Milling, and the Amount of Gluten in the Flour:

No.	General Character.	Weight Per Bushel.	Yield of Flour.	Dry Gluten in the Flour.
		Pounds.	Per Cent.	Per Cent.
1	Fine oft White Wheat	64	77.46	6.4
2	Superior Soft Red Wheat	62¾	78.40	9.3
3	Average Hard White Wheat	60	80.52	11.7
4	Average Hard Red Wheat	61¼	79.88	13.4

These wheats were equally and perfectly dry, and probably would have weighed much the same per bushel had the size and the shape of the berries of each wheat been similar, but they differed widely in this respect, No. 1 and No. 2 being medium or small sized, whilst Nos. 3 and 4 were long and arched. It is usually the wheats of the highest specific gravity or heaviest weight per bushel for which the miller pays the maximum price in the market. But that this character of wheat yields by far the smallest proportion of gluten is evident from the foregoing data; although, on the other hand, flour from such wheat will absorb the largest quantity of water on being made into bread. It is, however, the condition of the nitrogen, or rather the amount present as gluten, which is determined by the climatic conditions under which the wheat is grown, that has most to do with the quality of any flour for baking purposes. The following table gives the amount of gluten found by Mr. Seitz in six American flours.

Table Showing the Average Percentage Chemical Composition of Six American Flours:

No.	Description of Wheat.	Nitrogen.	Albuminoids.	Moist Gluten.	Dry Gluten.
1	Eagle Bluff, Illinois, spring	1.93	12.08	39.46	12.98
2	Red River, Minnesota, spring	1.71	10.68	7.32	2.80
3	Wife's Delight, Wisconsin, spring	1.54	9.63	24.89	10.30
4	Richmond, Virginia, winter	1.62	10.15	28.13	10.37
5	G. A. Schriver, Maryland, winter	1.46	9.10	25.14	9.92
6	Red "S," Ohio, winter	1.76	11.03	31.20	11.67
	Mean	1.67	10.45	26.02	9.67

These results show that not the least interesting part of Mr. Seitz's researches, is that he, consistently with the observations of Peligot, Boussingault, and others, establishes a very wide range in the character of the gluten obtained from different flours. And confirming the results of Rothamsted it is found that, among other circumstances, a relatively high temperature at the ripening period is favorable to a high percentage of gluten. The mutual adaptations of heat and moisture, throughout the various stages of the progress of the wheat plant, are, however, so almost infinitely varying, even from season to season, in one and the same locality, that it is not surprising there should be many exceptions to any sweeping generalization.

A study of the variations in the character of the wheat crop, and in the composition of the grain grown from year to year in the experimental field of Sir J. B. Lawes, at Rothamsted, England, side by side with the varying circumstances of root and leaf supply of moisture to the plant, and of temperature, is sufficient to show how numerous, and how indeed ever changing in their mutual relations, are the factors which lead to one or another order of development in the growing wheat plant. It is true that about three-fourths only of the total nitrogen of the grain of wheat are found in ordinary bread-flour, the remaining one-fourth or so being retained in the usually excluded or branny portions, which latter are always richer in nitrogen than the flour. But it has long been known to agricultural chemists that a considerable part of the nitrogenous matters of the excluded portions of the wheat berry is not of the same assimilable condition as those which exist in the flour, and it is now acknowledged by those who have given this matter their most serious consideration, that the nitrogenous substances of the bran of wheat are in an inferior degree digestible and available, at least to the human body. How far they may be assimilated and digested in the stomach of an herbivorous animal is still a matter of inquiry. It is acknowledged, however, among dairy farmers that there is no better milk-producing material than bran.

Diversified Crops. — The *Florida Dispatch* notes a marked change in the disposition of fruit growers in that State to confine themselves as closely as they heretofore have to oranges. There was a "big freeze" in 1886, which warned the settlers that it was not well to carry all their eggs in one basket. The cultivation of Sea Island cotton has undergone a similar change, owing to a decline in price. Rural industry has become more diversified in Florida, and in others of the Southern States, and the culture of crops is undertaken, which may prove profitable and may prove merely experimental. The raising of tobacco, the cultivation of the grape, sugar and rice planting are urged upon the people, and many have entered into these new fields of enterprise. The *Dispatch* concludes that the tracts of wet land may yet be utilized for the production of rice and sugar; that in Northern Florida cotton and tobacco will be raised in increased quantities; that the "flat lands" offer rare advantages for stock rearing, but that as the greater part of the uplands in the State are being divided into small holdings for fruit and vegetable growing, these will prove to be the greatest source of wealth, and furnish the largest volume of exports from the State. A "staple crop" is manifestly the crop that pays best, whether it be cucumbers or cotton, tomatoes or tobacco, and the farmers of any district or region should make the most of what can be most profitably raised. That is both the royal and democratic road to wealth.

How Many Grains to the Hill.—In their efforts to get a big crop, many persons use too much seed, and thus defeat their purpose. The answer to the question, "How many grains?" will properly vary with the locality; yet the most thoughtful, observant farmers, the country over, will agree with us that too many grains are usually put in the hill or drill. The tendency is towards fewer grains, but has not progressed fast enough. The older Western farmers can yet remember when the rule was to plant seven grains in the hill—two for the squirrels, and two for the crows, and three to grow. Three, or even four, to grow then, were not too many, for the soil was very productive. But some now plant four to five to grow, and the general rule is to plant three to five. We have become convinced that two to three would be better, and suggest that our Western readers try a few strips with only two or three plants in the hill, or a corresponding reduction if the corn is planted in drills. It is generally supposed that fewer grains should be planted in the East than in the West. Is this correct? In the East commercial, or home-made fertilizers are used more largely; the yield of corn per acre is greater East than West, indicating that the ground is made more productive. Also, in the East the stover is more desired, and the most and best stover is secured by rather close planting. This question of how many grains should receive more study, and be the subject of many experiments, in order to ascertain the facts in the case.

A VILLAGE OR SUBURBAN COTTAGE COSTING $2,500.

The cottage illustrated herewith, from designs by D. W. King, Architect, New York, combines neatness and simplicity of appearance with great convenience and comfort. As shown by the perspective view, figure 1, a broad veranda and projecting gables furnish protection from direct sunshine in summer and storms at all times, besides imparting a pleasing effect to the structure. The cellar extends under the entire house, and is six and a half feet high in the clear, with concrete floor, and stone walls laid in cement mortar, pointed inside to the earth line and on both sides above that. The cellar is entered by a flight of stairs beneath the main stairway, and well lighted by windows which may be provided with double sash in cold weather. The first story, of which a plan is shown in figure 2, is ten feet high in the clear; the hall, parlor, and dining-room finished in hard wood oiled on the grain. The stairs are provided with newel and hand-rail of cherry or other hard wood. If desired, the doorway leading to the parlor may be made wider and closed with a portière. The parlor is a bright cheerful room, with two windows in front and one on the side, and a genuine fireside. It communicates with the dining-room by sliding doors. The dining-room is well proportioned and large enough for a table to seat twelve persons comfortably at once. The open fire-place and ample bay give it a very home-like, cosey air. The kitchen is cut off from the other rooms by the pantry, and all odors of cooking are thus excluded. The second story, figure 3, is eight feet high in the clear. It contains a stair hall, four chambers of comfortable size, furnished with closets, and a bath-room. It is finished in pine, painted or oiled on the grain as may be preferred. The length exclusive of veranda is thirty feet, the greatest width including bay window is twenty-six feet. The first and second stories are clapboarded on surfaced sheathing, with building paper between; the gables are covered with redwood shingles, and the roof with white pine shingles. The attic contains one good-sized chamber in front, the rest being floored but left unfinished for storage purposes. All the plastering is of three-coat work. The outside is painted with three coats. The estimated cost is $2,500, which will be modified by local prices of materials and labor.

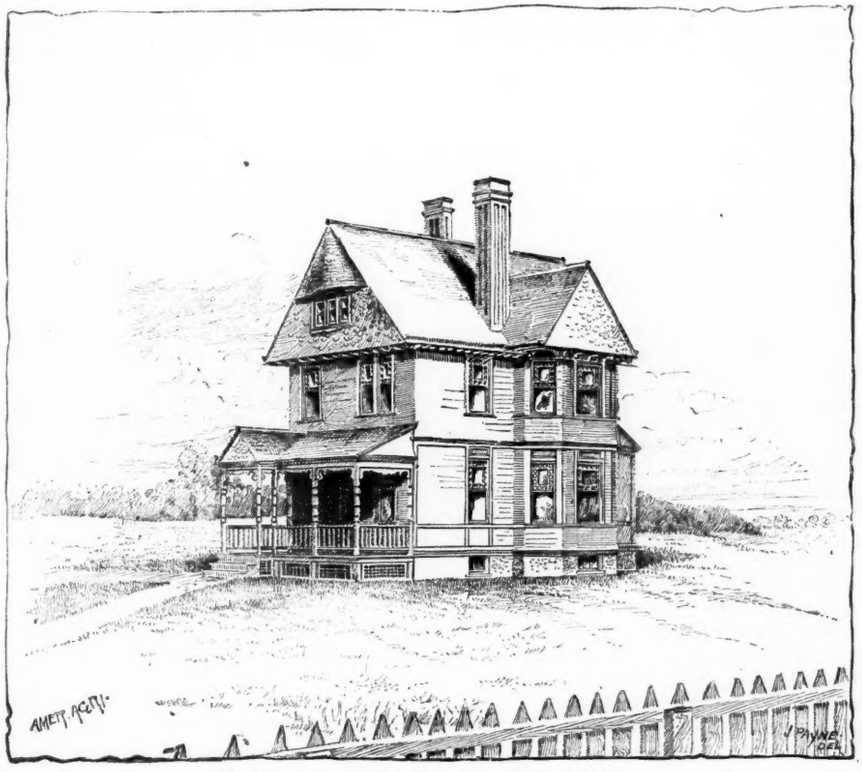


Fig. 1.—PERSPECTIVE VIEW OF SUBURBAN COTTAGE.

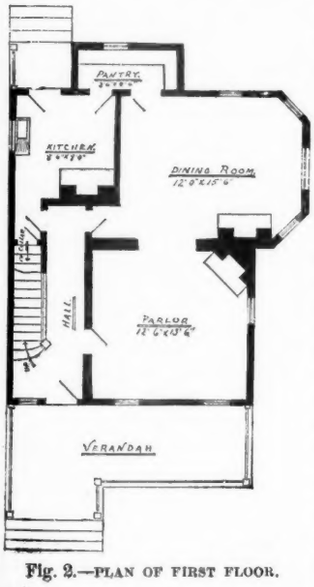


Fig. 2.—PLAN OF FIRST FLOOR.

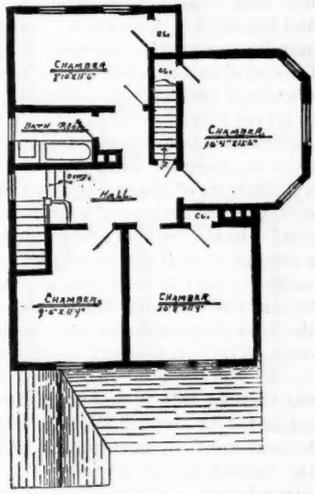


Fig. 3.—PLAN OF SECOND FLOOR.

Forest Trees from Seed.—J. C. Tipton, Carroll Co., Virginia, asks about collecting and sowing the seeds of White and Pitch Pines and Locust. The seeds of the White Pine usually mature at the end of the second autumn. The cones should be gathered as soon as mature, else the scales may open and the seeds be lost. The cones of the Pitch Pine do not ripen until the end of the third, sometimes even not until the fourth autumn. The seeds of these pines are sown by nurserymen on slightly raised beds of light sandy soil, sown broadcast, and must be covered very slightly by raking in, an operation requiring a skilled hand. Afterwards the surface is patted with the back of the spade, or rolled with a light roller. The young seedlings are subject to two injuries, which must be guarded against. They may be killed by the intense heat of the sun, or they may "damp off," the young stem decaying at the surface of the soil, and the plant dies. The remedy for the first of these is shading, and it is useless to try to raise seedling forest trees, even the hardiest oak, without provision for shading. If the bed is of moderate size, the best shade is a screen of laths. Side pieces of suitable length are provided, and plasterer's laths are nailed to these as far apart as the width of a lath. These screens are supported above the beds upon boards placed on edge. The shade is constantly changing and affords an effective protection. If required to give a seed bed protection at once, and no screens are ready, cut a lot of brush, or twigs about a foot long, and stick these all over the seedbed and among the seedlings. Damping off may be prevented if the remedy is applied promptly. The remedy is dry sand, which should be kept at hand in readiness for use as soon as the stems show signs of decay. Sift over the bed dry sand to the depth of an inch. The efficacy of this remedy depends upon its prompt application. In nurseries where seedlings are raised on a large scale, whole ranges of beds, acres, are under shades, which are high enough to allow men to work under them. Forked posts are set in the ground, and poles laid across them; brush, cut in leaf, is laid across these, to make a dense shade, which stands seven feet above the surface of the beds. Locust seeds may be sown in fall or in spring. If not sown until spring, the seeds should be kept in the pods all winter. If they have been kept through the winter, it is always safer to scald the seeds before sowing. Pour boiling water over the seeds, and let them remain covered until cool. Pour off the water, separate those that have not swollen, and scald a second time; and so again if many are left unaffected. Plant the big and swollen ones in rows, about an inch apart. The efficacy of scalding depends much upon the slow cooling; pour off the water when pretty cool, and cover the seeds with a blanket, or some such fabric, and set near the stove.

SUGAR—PRODUCTION, CONSUMPTION AND COST.

The cane sugar produced in the United States varies very much from year to year, as a few figures will show. It was in 1840, 121,571 hogsheads; in 1850, 237,133; in 1860, 302,205; in 1870, 87,043 (a great decline); in 1880, 178,272; in 1884, 302,000. The hogshead is computed at 1,000 pounds. The area under cultivation in 1880 was 227,766 acres. In addition to the cane sugar product in 1880, there was a product of 16,573,273 gallons of molasses, which at fifty gallons to a hogshead would require 331,465 hogsheads. The product of sugar per acre in Louisiana is placed anywhere from 1,700 to 3,000 pounds—a wide margin. A product of 5,000 pounds is reported on the best lands in Java, and as much as 5,700 in the West Indies. The total sugar product of the world is put at 5,140,060,000 pounds, divided as follows:

	Pounds		Pounds.
Cane Sugar	3,420,468,000	Maple Sugar	66,139,000
Beet "	1,433,000,000	Palm "	220,462,000

The product of sugar and molasses (besides cane) in the United States was as follows for the years specified:

	1860.	1870.	1880.
Maple Sugar, pounds	40,120,205	28,444,000	36,576,000
" Molasses, gallons	1,597,589	921,000	1,796,000
Sorghum Sugar, pounds		24,000	17,292
" Molasses, gallons	7,232,000	16,051,000	28,444,000
			1884.
Beet Sugar		Pounds	1,278,000
Glucose or Starch Sugar		"	300,000,000

The sugar import last year was 3,218,000,000 pounds, and the home product was 178,872,000 for cane sugar (in 1880) and 36,576,000 for maple. The export was 190,700,000 pounds. Add the import and product and deduct the export, and there remain some 3,242,748,000 pounds, which gives fifty-four pounds to the head for 60,000,000 of people. The molasses imported was 38,000,000 gallons or eight million less than our entire production in 1880, while our import of sugar is fifteen times as much as our sugar product. In the government reports cane sugar is rated at five cents a pound, and molasses thirty cents a gallon; maple sugar ten cents a pound (it costs six to seven to make it), molasses at seventy-five cents a gallon (it often brings one dollar and one dollar and twenty-five cents in bulk); beet sugar eight cents a pound (the yield is twenty-one tons per acre, with one hundred and ninety pounds of sugar per ton, or four thousand pounds in all); glucose three cents a pound. There are more than twenty glucose factories in the United States, with a capacity of 61,000 bushels of corn per day, each bushel producing thirty-two pounds of glucose. In 1884, the last year for which we have returns, these factories ran only to about one-half their capacity. Two farmers at White River, in Washington Territory, made a glowing report of the yield of beets on their lands in 1883. One raised sixty-five long tons (2,240 pounds) on two acres, at a cost of two dollars and twenty-five cents a ton. The other has averaged twenty tons per acre for five years, at a cost of two dollars and a half per ton. Add the cost of manufacturing the beets into sugar, and a very handsome margin of profit is left. Sorghum is still in its infancy, and indeed in a very doubtful stage. The special report of the Department of Agriculture made in 1884 says that "the manufacture of sugar from sorghum has not yet proved financially successful. . . . The expectations of the earlier advocates of the industry have not been met, the predictions of enthusiastic prophets have not been verified." In this year of grace 1888, the sorghum sugar business is still a case of "great expectations." This is, however, to be said: The sorghum seed is very valuable as food for cattle. It yields from twenty-five to thirty-three bushels per acre, and it is claimed that the seed alone will pay the cost of cultivating and harvesting the crop. The seed is worth about sixty cents a bushel.

In 1872 the total production of beet sugar in Europe was 1,025,000 tons, in 1876 it was 1,300,000 tons, at present the product is estimated at about 2,250,000. The manufacture of this sugar has been fostered by government and directed with great skill and by the application of science. The result is that the refined beet sugar becomes a competitor with cane sugar in the very tropics themselves. Another sugar, not much known here, is the "palm sugar," which is made from several varieties of the palm tree, the date palm being the chief. Its total product is about 200,000 tons per year. This sugar is mostly made and consumed in India, and is there called "jaggery." Some of this sugar has been exported to England, and has been sold in the London market for thirteen to fifteen shillings per hundred weight.

Now, after all this saccharine talk, it is well to know what becomes of these sweet things, and by whom they are consumed. In the United States the consumption of sugar per head of the population was twenty-nine pounds in 1869; thirty-nine in 1879; forty-eight in 1883, and fifty-four in 1887. In England the consumption of sugar was thirty-two pounds per head in 1858; forty-one and a half in 1867; sixty-two in 1876. For several countries the consumption is placed as follows:

United Kingdom	63 pounds.	Austro-Hungary	15 pounds.
France	25 "	Italy	6 "
Germany	18 "	Spain	7 "
Denmark	33 "	United States	54 "
Holland	25 "	Canada	51 "

Australia is put at eighty-six pounds *per capita* and Venezuela at one hundred and eighty—a figure that seems incredible. In all countries the average consumption annually increases. Sugar is becoming as much a necessity of life as bread. What wise cultivation has done for beet sugar it may do for the sugar cane and sorghum. Mr. Darwin puts on record the statement that the beet in France has yielded almost exactly double the quantity of sugar that it formerly supplied, and this has been effected by the most careful and systematic selection. The specific gravity of the roots being regularly tested and the best roots saved for seed.

Our "sweet" subject is not complete without the statement that the annual honey product is about 28,000,000 pounds, or half a pound apiece to the population. In 1880, Tennessee made 2,131,000 pounds; New York 2,089,000; Ohio 1,627,000; North Carolina 1,591,000; Kentucky 1,500,565, and seven other States—Arkansas, Georgia, Illinois, Iowa, Michigan, Pennsylvania, and Virginia—produced more than one million pounds each; altogether, in the States named, more than half the entire product of the country.

COFFEE CULTURE IN INDIA.

A. NORTON, CENT. PROVINCES, INDIA.

Coffee was first introduced into India by a Mohammedan from Arabia about two centuries ago, the trees being planted in South India, in the region of the Nilgherry Mountains. The trees were not cared for, but the climate was so congenial to them that they perpetuated themselves. A little more than forty years ago an English gentleman started the first successful coffee plantation in India. Since then the cultivation of this useful seed has spread widely in Southern India, and the export of coffee, principally to Europe, has become very large. The East Indian coffee is of a superior quality, on the whole. The past summer Mysore coffee from South India sold in London for one hundred and thirty shillings per hundred weight, while at the same time the South American coffee from Rio was not quoted higher than seventy-four shillings per hundred weight in the same market.

Coffee is grown without irrigation all over the highlands of South India, at an elevation from 2,500 to 3,500 feet above sea level. It is in these localities where all the large plantations are found. By setting out the trees in the shade, and irrigating during the hot season, they can be grown in gardens anywhere in India, except in those sections where the frosts are too severe for it. The last cold season there was frost one night that killed the leaves on tomato vines and beans in my garden, which is 2,500 feet above sea level, in twenty-one and a half degrees north latitude, but the coffee trees, even those without shade, were uninjured. They are now in their fourth year, and the larger ones are heavily laden with berries. Coffee trees in this country are universally topped by English planters, leaving the trees only three or four feet high, and causing them to bear heavier. The seed, to germinate, must be planted soon after it is plucked from the tree, otherwise, if it is allowed to become dry, the rind gets so hard that the sprout cannot force its way to the outside. The seeds, unpulped, should be sown in a basket or box, not deeper than one inch. They should be watered daily, and it requires about three months before the plants come up.

In regions like India and Southern California, where there is a long dry season, it is best to transplant the coffee plants six inches apart in nursery rows two feet apart, where they can be conveniently irrigated twice a week. The nursery ground should be enriched and prepared as thoroughly before setting out the plants as if for a bed of cauliflowers or early cabbage. After one year the trees may be transplanted to their permanent places. The ground cannot be too rich for them, but it must be well drained, either naturally or artificially, hence a side hill is a favorable location. The coffee tree thrives much better in the shade than in the open ground, and in the northern hemisphere the north rather than the south side of the hill should be chosen. While the coffee tree in semi-tropical regions, near the frost line, gives a lighter yield than in

equatorial locations, yet the semi-tropical gives coffee of a superior aroma and quality. The quality depends to a considerable extent on the process of curing. In order to get the best quality, the berries when ripe should be picked and spread on racks in the shade; after fifteen days the drying of the pulp may be finished in the sunshine, and then the dried husk pounded off. This is said to be the method employed by the Arabs at Mocha. It pays in small gardens, but on the large plantations it is impracticable, on account of the large quantities of berries to be pulped in a short time. It is highly improbable that coffee can be grown in the United States with profit, because the manual labor required in weeding, picking, etc., can be obtained so much cheaper in other lands with a more congenial climate for it, and because in these days of cheap and rapid transport a commodity like coffee, not easily damaged, can be so readily shipped to all competing markets. Yet, it being a shrub easily raised and soon brought to fruitage, with its bright green leaves, its snowy white blossoms and cherry-like berries, it ought to find a place in shady nooks in gardens generally, in Southern California, Florida, and the other extreme Southern States, where it would win its way even as an ornamental tree, and be not altogether profitless.

COFFEE AS A DECORATIVE PLANT.

In the accompanying engraving, reproduced from the *Gardener's Chronicle*, England, is represented a branch of a coffee tree grown at the Royal Botanical Garden at Kew. It is densely laden with red berries, and suggests that coffee might be profitably cultivated for the ornamentation of a warm greenhouse, it being beautiful alike in its foliage, its white jasmine-like flowers, and its fruit. Commercial florists who have large houses devoted to forcing flowers for winter sales, and who also grow "Smilax" (*Myrsiphyllum*), for green to accompany them, as well as those who furnish the bright-berried *Ardisia*, *Aucuba*, and similar plants in pots for tables, might profitably add coffee to their list. It no doubt would meet with a ready sale. It is easily propagated from cuttings, and with a turfy loam mixed with sand, ample pot-room, and an abundance of water, its culture presents no difficulties. Some enterprising gardener in Florida or other of the southernmost States may find it worth while to propagate the plants in the open ground, and ship them to Northern florists before the weather becomes too cool. The engraving shows a fruiting branch, reduced in size. There are four species of *Coffea* in cultivation. The original *C. Arabica*, but really a native of Abyssinia; two others are natives of India, and the fourth is from Liberia. Experiments in cultivating coffee in the sub-tropical parts of this country should include the Liberian species, *C. Liberica*, as it is much hardier than the others; while those of us, who, through the courtesy of the Liberian Commissioners, at the Centennial Exhibition, had an opportunity to test this most excellent coffee, recollect the superior quality of the Liberian product brought from its native habitat.

A COFFEE TREE BRANCH.

THE AMERICAN WHITE BIRCH.

Our native White Birch, so common in New England and other northern localities, does not extend farther south than Pennsylvania or Delaware. It was originally described as a distinct species, *Betula populifolia*, from the resemblance of its leaves to those of the poplars. Later botanists being unable to find any important difference between this and *B. alba*, the White Birch of Europe, regarded it as a variety of that species, and it is now called *B. alba*, var. *populifolia*. Like its European relative, it is a rapidly growing tree, thriving on

THE AMERICAN WHITE BIRCH.

soils so poor that but little else will grow upon them. Its usual hight is twenty-five or thirty feet, but the European tree, in favorable locations, is seventy to eighty feet. Both trees are eminently graceful, and some varieties of the European, notably the Cut-leaved Weeping Birch, and Young's Weeping Birch, are highly valued in ornamental planting; and the Purple-leaved Birch, with foliage as dark as that of the Purple Beech, is a comparatively recent variety, very popular where it is known. These varieties are propagated by layers and cuttings. Our variety of the tree, as well as the European type, has a bark conspicuous for its chalky whiteness, against which the blackish branches show in strong contrast. The spray is very long and slender, and the leaves, being on long petioles, are tremulous like those of the aspen. The leaves are triangular in shape, with a long taper point; the shape of the leaves constitutes the chief difference between this and the European tree. Both sides of the leaves are smooth and shining, and when young have numerous resinous glands which make them somewhat glutinous. In autumn they turn of a rich yellow color. The wood of the tree speedily decays, and while some writers consider the tree not worth growing even for fuel, others, in view of the fact that it will grow on the poorest land, advise planting it, as it will give a supply of fuel within a very short time. When cut, the stump throws up numerous sprouts, which soon form a dense thicket. As fuel, it does not rank very high, but for summer use in the kitchen it answers a good purpose. It makes an excellent charcoal. Gardeners, where it is readily obtained, prefer the brush to all others for pea sticks. Its twiggy tops are admirably suited for this use. The stronger stems are sometimes used for bean poles, for which they are badly suited. Lima and other running beans are most luxuriant towards the close of the season. By the time the poles are the most heavily laden with vines, if of birch, that portion in the ground will be decayed, and a heavy autumn storm is likely to prostrate many of them. Among the small manufactures for which the wood of this birch is employed are the making of spools and shoe pegs. One factory in Vermont is said to turn out four hundred bushels of shoe-pegs daily. This tree is easily raised from seed. Like other birches it has two kinds of flowers, both in long

scaly clusters called "aments" or "catkins." The staminate or male flowers are in drooping aments, about three inches long, produced singly at the ends of the twigs, and of a brownish yellow color. The pistillate or fertile flowers are in aments about an inch long, green, and erect in the axils of the leaves, and ripen into a sort of scaly cone. The aments appear the previous year in July, and pass the winter unprotected, to open in the earliest days of spring. The seeds ripen in September or October, and to prevent loss they should be gathered in damp weather. Moisture causes the scales of the cone to close, and prevent the seeds from falling out. As soon as collected the cones should be spread very thinly in a dry airy loft. They should not be in masses, as even when apparently dry there is danger that they may become heated and thus injure the seeds. The seeds may be sown as soon as gathered, or mixed with sand and kept until spring, when they may be sown in a seed-bed, covering very slightly. Some advise sowing on the surface, when patting with the back of the spade will give them sufficient covering. It is well to cover the bed with moss or leaves, which will prevent the surface of the soil from becoming too dry, and will hide the seed from the birds. The covering should be removed when the seeds begin to germinate. Where there is a thicket of birch available, it is advised to procure self-sown trees, or suckers that have sprung from stumps. These both transplant readily, and considerable time is gained by using them. While there are many more valuable trees than white birch, there are probably none that will allow poor waste land to be utilized as profitably. This tree is not planted for ornament as often as its merits deserve. A well-grown specimen shows the appropriateness of Coleridge's epithet, when he called the European tree "The Lady of the Woods."

Our Canned Fruits.—In our antipodes lamentations are made over the fact that while fruit is most abundant and very easily raised in Australasia, the canned fruit, which is an important element in the markets, is all from the United States; even the home steamers plying in those waters are supplied with American products. However, a canned fruit factory, with a capacity of eight hundred tins a day, has recently been started near Sydney, New South Wales, and is regarded with great favor by the antipodeans. The superintendent of the factory is a skilled professor of the art of canning from America—meaning, doubtless, Maryland or Maine.

PÆONIES, HERBACEOUS AND TREE.

Pæonies, or, as they were most often called, "Pinys," were at one time among the most frequent, as they were the most showy, ornaments of our gardens. Some twenty-five years ago, they mainly went out of fashion, probably from the idea that they were coarse, but of late years they have come into favor again and are now quite popular. The name *Pæonia* is that of an ancient Greek physician, applied in his honor to a species then used in medicine. There are two principal groups of these plants, indicated by the character of their stems as "Herbaceous" and "Tree Pæonies." Of the former there are twenty or more species, most of them natives of Europe, Asia, etc. There is a solitary species, not showy, found on our northwest coast, *P. Brownii*, sometimes given incorrectly in catalogues as *P. Californica*. These species differ greatly in foliage, in size, color and fragrance of flowers, and by their variation and crossing, have produced almost innumerable varieties. A handful of seed from select plants will produce a great number of good sorts, many as fine as the named ones. They all have large fleshy roots; they are propagated by dividing the roots in such a manner as to leave a bud to each division. This should be done in early autumn when flowering is past. They can hardly have too rich a soil. Seeds should be sown as soon as ripe, but the plants do not appear until the second spring. *Tree Pæonies* are mainly derived from *P. Moutan*, from China and Japan. This has woody stems and grows but three or four feet high; it spreads widely upon the ground and presents a broad surface for the flowers, as many as seventy or eighty having been borne on a single plant. The texture of the flowers is more delicate than in the herbaceous kinds and their colors more pleasing. The Tree Pæonies are more difficult to propagate than the others, and usually sell at wholesale at more than twice the price of the others. In a catalogue now before us, some forty named varieties are offered. We present an engraving of a variety now very popular abroad on account of the great size of its flowers. It is "Louise Mouchelet." Its petals are described as "a lovely flesh pink, with a satiny luster." It is regarded by those who make a specialty of Tree Pæonies as the finest of all the flesh-colored varieties. The tree varieties are raised by layers, cuttings, and largely by grafting on the fleshy roots of the herbaceous kinds.

THE TREE PÆONIA "LOUISE MOUCHELET."

SUB-TROPICAL PLANTS.—KNOT-WEEDS.

There are those who think it a proper use to make of flowers, to plant them in a bed where they form a many-colored patch-work, almost as brilliant in effect as could be made with pieces of brightly-colored flannel. Those who indulge in "bedding" or "massing," as it is termed, should find pleasure in it, for it is most expensive, whether in the original outlay for the many plants required, and the care demanded in keeping the plants in order and preserving the outlines of the pattern distinct. Could plants express an opinion, how they would protest against this treatment, they which, if allowed to grow in their own way, would develop into objects of beauty. Quite the reverse of the "bedding system" is "sub-tropical planting": in this, plants are selected for beauty of form; the flowers, while not altogether overlooked, are regarded as secondary to grace of outline. The plants are allowed to develop in their natural habit, either planted as single specimens or in groups of a few each. As an illustration of this kind of planting, set in the center of a small well-kept lawn a single plant of the Castor-oil Plant, often called "Palma Christi." What more stately than a plant of this (*Ricinus communis*), or some of its varieties? One plant of this kind is sufficient decoration for a front yard, costs but little at the start, and requires but little care all through the season. There are several other plants which may be employed singly with fine effect.

Fig. 1.—POLYGONUM ORIENTALE.

We started to say something about the *Polygonums*, or Knot-weeds, some species of which have recently been commended for sub-tropical planting. Among the plants found in the poorly kept gardens of many years ago, in company with sunflowers, hollyhocks, morning-glories, upon the fence, was one called "Prince's Feather," and "Ragged Sailor." The genus *Polygonum* is a large one, containing about 150 species, ranging from humble weeds to some ornamental plants. Its name means "many" and "knees," as the stems are marked by conspicuous joints. The genus belongs to the Buckwheat Family (*Polygonaceæ*), which includes the Docks (*Rumex*), Rhubarb (*Rheum*), etc. The species above referred to as Ragged Sailor and Prince's Feather is *P. orientale*, and was introduced from the East Indies in 1707, and has become naturalized to some extent. It was with no little surprise that we found this plant commended, in a recent work, for ornamental planting. Removed from its poverty-stricken surroundings, isolated, in good soil, it is more pleasing than many other more costly plants that have higher reputation.

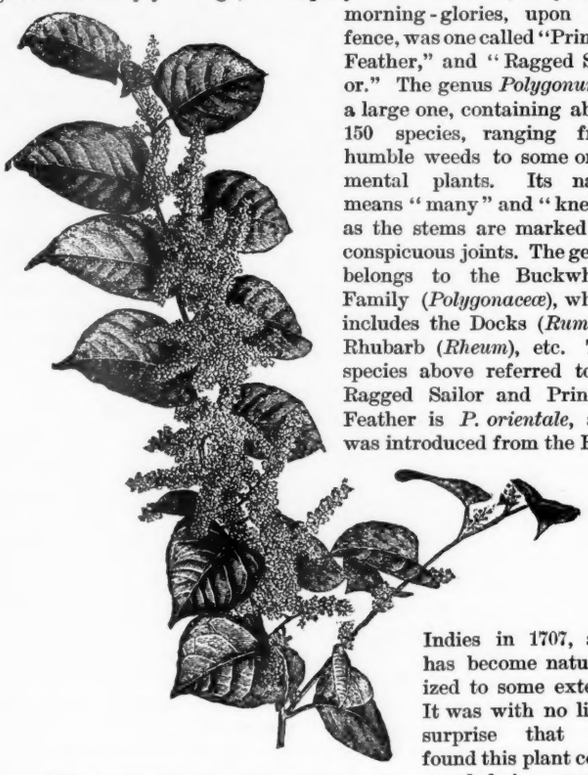


Fig. 2.—POLYGONUM CUSPIDATUM.

As seen by figure 1, it is a freely branching plant which grows from five to eight or even ten feet high. Its leaves are large, ovate and pointed. The small flowers are in dense racemes which are pendulous at and near the ends of the branches; they are a dark rose-color, varying to lighter, and even to white. A well-grown specimen is quite showy. The plant is an annual, and is readily raised from its shining black seeds. Among the perennial garden species are two from Japan. One of these, *P. cuspidatum* (pointed-leaved), erroneously often called *P. Sieboldi*, was introduced in 1825. It forms large clumps of stems, four to eight feet high; the summit of one of these is shown in figure 2. The large leaves are terminated in a *cusp*, or long point. The small creamy-white flowers are in dense panicles about six inches long, abundantly on the upper parts of the branches; they are succeeded by scarlet fruits. This species should be planted by itself, where it will not be disturbed, as when the roots are cut they spread widely.

The "Sachalin Knot-weed" (*P. Sachalinense*), so named from the island of Sachalin, whence it was brought in 1869. Its habit of growth is shown in figure 3. The yellowish flowers are produced late in summer in axillary racemes. The plant is very fond of a rich, moist soil, and is an excellent species to naturalize in semi-wild places near a body of water. This has the same tendency to spread as the preceding, if its roots are disturbed, and both are best suited to large places.

THE VALUE OF UNDERDRAINING.

Ever since underdraining was first introduced, farmers who had not witnessed its effect were accustomed to say: "Oh, yes, we presume draining will make the land drier in the spring, and will enable us to plow the ground and get in the crops earlier and with less work, but in the summer the land is so dry that it bakes into bricks.

Fig. 3.—POLYGONUM SACHALINENSE.

We don't want to drain it and make it drier. It is too dry now." Thousands of farmers in old times made such remarks. But, thanks to the agricultural press, thanks to farmers' clubs, thanks to fairs and farmers' institutes, and grange meetings, and to railroads, that make it easy for farmers to travel to and fro, whereby knowledge is increased—thanks, in short, to the wonderful age in which we live, we have not for several years heard this objection made to underdraining. It is true our old friend the Deacon still says, "Give me a good open ditch so that I can see the water run." But all farmers now admit that draining is a good thing, and would be glad, as our old friend Timothy Bunker, Esq., said, to have the "bottom knocked out" of every wet spot on the farm.

It is strange, however, now that farmers are thoroughly convinced of the value of underdraining, that some of our agricultural writers, wanting, we may suppose, something to talk about, have started the notion that draining intensifies the bad effects of drouth! Of course there is no truth in it. Land that needs draining was never injured by draining—either in spring, summer, autumn, or winter, in seasons cold, hot, wet, or dry.

Mr. Sylvester Schrant, of Christian Co., Ill., writes us: "My first lessons in tile-draining I got from the AMERICAN AGRICULTURIST a good many years ago, but could not apply them until 1883. We then organized and made a drainage district, and a ditch seven miles long. Now with our drainage, and our three feet of black loam, we have the best county in Illinois. My corn crop, since underdraining, for the last three years, on from sixty-four to eighty acres each year, averaged ninety bushels per acre, and I will try hard to make one hundred bushels of sound corn per acre this year."

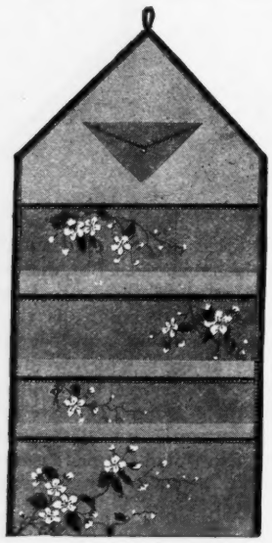
THE HOUSEHOLD.

CHILDREN'S CORNERS.

There are comparatively few houses in which a large, bright, warm room can be spared for a nursery. Even where this might be done, the mother cannot employ a nurse to stay with the children, and her own cares and duties are too various to admit of her being long in any one place. Perhaps she does not keep even a maid-of-all-work. Then the children must inevitably follow the mother about, in kitchen, bed-rooms, or sitting-room, as her work demands. It is not uncommon, in so-called well-regulated families, to find children's toys scattered all over the house, while hats, coats, and mittens are seldom twice in the same place.

A nursery or play-room for the children may be out of the question; but surely some corner, chest, drawer, or portion of a closet, may be found for each child, where its individual possessions should be kept when not in use. On the whole, the most satisfactory piece of furniture in our house is a home-made one—a set of shelves which his father made for our five-year-old boy. The shelves are somewhat more than a yard long, and separated by unequal distances in order to accommodate the different-sized toys. On the top shelf stand his bank, vase, and several pretty but somewhat fragile toys; the next shelf is entirely devoted to books, of which he has more than most boys, while the lower ones are filled with his remaining treasures. To a simple brass rod with rings, pretty, inexpensive curtains are attached. When these are drawn, the effect is that of book-shelves—an ornament to our living-room, where they stand under the mantel in one corner. There the boy is "monarch of all he surveys," and he has no excuse for leaving his toys about the house. When his friends come to play with him, it is easy for them to take out such things as they wish and put them back again when they are through playing, thus avoiding the general chaos so common after children's visits.

Where there are several children in the family, it is not difficult to arrange justly for each child's belongings, though there may be some quarreling, and a good deal of difference in regard to the orderliness and care which the different children display. Only a little care is necessary to provide a hook for each child's outside wraps, and, with a little insistence, children will soon hang up hat or coat in its proper place, from force of habit. Too many mothers forget that the power of good habits is almost as strong as bad ones. They forget too that children have rights which should not be disregarded. If possible, give each child a bed of its own. If this cannot be afforded, at least let each child have its own clothing, brush, comb, toothbrush, towel and wash-cloth, which no one else shall ever use. If a place be provided for clothing, each child will learn to keep its own clothes in their place. An ingenious and industrious mother may, with a very slight outlay of money, make her children's rooms convenient, comfortable and attractive, while the children themselves are trained to habits of neatness and order. If you cannot spare a room, be sure to give each child "a corner"; before buying them more toys, provide a place for those they already have.

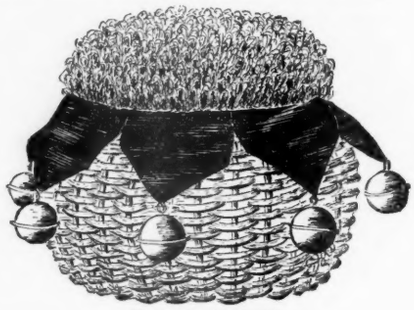


A SERVICEABLE TRAVELING CASE.

Home—Woman's Realm.—Home is the *habitat* of woman. In the home all that is characteristically feminine in woman unfolds and flourishes. Home without woman is a misnomer, for woman makes the home, and home is what she makes it. If she is illiterate, her home partakes of this quality; if she is immoral, her home cannot be the abode of virtue; if she is coarse, refinement does not dwell where she resides. If she is cultured, pure, refined, these qualities will characterize the home which she creates. The higher the degree of her culture, her purity, her refinement, the more will these qualities characterize the home of which she is the center. The self that a woman takes with her in her marriage is her real dower. If her dower can be reckoned in numerals only, no matter how many they may be, wretched indeed will be her husband, impoverished her children. But if she possess industry, gentleness, self-abnegation, purity, intelligence, combined with capability, she is in herself a treasure of treasures.

A NEAT HAIR-PIN CUSHION.

Any pretty little basket can be used for this purpose. It may be left in its natural color, or gilded. The one seen in our engraving has had a couple of coats of green bronzing. The cover is knitted, and requires an ounce of scarlet split zephyr. Upon ordinary-sized steel needles set up twenty-five stitches; knit the first row and every alternate one plain, the intervening one by winding the zephyr around the first finger and needle four times, and knit it in as if it were one stitch; the first and last stitch of these rows should be knit plain. When the piece becomes square bind it off. The little straps of ribbon matching the zephyr in color are cut three inches long; seven will be needed of one inch width. These have the corners turned back on one end, and a small brass bell attached to the point; sew them around the opening of the basket, laying a little plait in each as they are sewed on. Fill the basket with curled hair, and tuck the cover over and in around the edges.



HAIR-PIN CUSHION.

A CONVENIENT TRAVELING CASE.

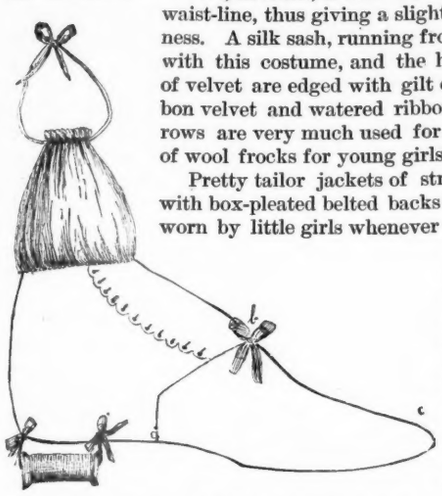
The little device shown in our engraving will be found very useful for traveling purposes, as it may be hung over the wash-stand in one's room at a hotel or boarding house. It is made of brown silk, and is lined with oil-silk. The pockets are also lined with the latter, and are bound with braid of a darker shade across the top, turned over and basted up. The outside is left long enough to form the bottom pocket. The sides and top are bound with the braid; a loop of the same is fastened on the point, and a button on the back to keep it together. The bottom pocket is intended for the hair brush, the second one for the comb, the third for tooth and nail brush, the fourth for soap and wash-rags, and the upper one for hair-pins or powder. The ornamental design is painted on.

WHAT LITTLE FOLKS ARE WEARING.

The tiny dot, just out of long dresses, requires, of course, only simple slips of nainsook. These are made with either round or pointed yokes, finely tucked all over, or with bands of feather stitching or embroidery, separating clusters of tucks. The skirt is plainly hemmed, tucked and gathered to the yoke, and the sleeves are slightly full at the wristbands. Girls from two to six years wear the "baby-waist" dress, which has a very deep yoke and extremely short waist between that and the belt. The skirt is full but not so long as last year, coming only half way between the knee and ankle. Two sash ends of the nainsook, with trimmed ends, are sometimes sewed to the sides of the belt, and tied in a large bow behind. Baby boys also wear these, but when past two and a half appear more boyish in one piece dresses of *piqué*, the skirts of which are laid in large pleats and sewed to a round waist beneath a belt. This waist has a box pleat down the middle and six narrow side pleats on each side, and is finished by a turn-down collar open both back and front. The useful sailor suits, too, are again seen, of flannel or dotted and striped *piqué*, and we would suggest to busy mothers, who are weary of sewing on buttons, the advisability of sewing the kilt skirts onto cotton underwaists or else having suspenders to hold them up. The sailor blouse is now cut in a point

low at the throat, with a deep collar, square behind, pointed in front, and finished by a sailor knot of blue or red ribbon.

Girls under twelve still wear guimpes with many of their low-neck frocks, but useful wash dresses for school have plain high waists, pointed in front with a sash at the back, or else belted waists ornamented with rows of feather-stitched tucks running down the back and front and slightly gathered into the belt. Three breadths of gingham or percale are used for small skirts, and four in those for larger girls. Handsome white dresses have the waists cut out of all-over embroidery, and then given a striped effect by box pleats of nainsook sewed on to them. The skirts are of the flouncing embroidery, which shows a small portion of plain fabric at the top and is finished by scallops at the foot. The sleeves, of plain muslin, are half long, with a corded edge, and finished by pointed caps of embroidery at the top. Watered ribbon two inches wide is run round the waist beneath the pleats and tied in a bow on the side. Small bows also adorn the shoulders. Young misses wear large plaids in twilled wools, made with kilt skirts, sash drapery, and pleated, belted Norfolk jackets. Plain cashmeres, too, are made up for them, in a quaint manner, with full gathered skirts, pointed waists fastened behind, and full sleeves pleated top and bottom. The middle of the waist, in front, is laid in tucks at the throat and waist-line, thus giving a slight and becoming fullness. A silk sash, running from the sides, is worn with this costume, and the high collar and cuffs of velvet are edged with gilt or silver braid. Ribbon velvet and watered ribbon put on in straight rows are very much used for trimming the skirts of wool frocks for young girls.



COMBINATION NEEDLE BOOK AND BUTTON BAG.

Pretty tailor jackets of striped or plain cloth, with box-pleated belted backs and fitted fronts are worn by little girls whenever an outside garment is required, or for school they have ulsters of plaid cheviot with coachmen's capes. Misses like the new sailor hats with crowns four inches high and stiff, narrow brims, which are faced with dark velvet and trimmed with a galloon band encircling the crown and a bow of ribbon in two colors perched at the back or on the left side. They also wear the English walking hats, so popular with young ladies. For boys in short trowsers, suits of cheviot, made with Norfolk jackets, are used for ordinary wear, and dark corkscrews and diagonals for best. Sailor caps and hats are the favorites for boys, and like those for their sisters the latter have higher crowns and narrower brims than formerly.

STRAWBERRIES IN AND OUT OF SEASON.

STRAWBERRY SHORTCAKE.—A tender and deliciously "short" cake is made in the following way. Two cups of fresh milk, four tablespoonfuls of melted butter, two heaped tablespoonfuls of "cerealine flakes," and enough sifted flour to form a smooth batter. Add two teaspoonfuls of baking powder and beat vigorously for three minutes. Have ready two good sized buttered pie-tins, in which pour the mixture evenly and bake in a lively oven. When done slip the cakes on a platter and place between them and on top three pints of mashed and sweetened strawberries and return to the oven for a few minntes. A pitcher of cream is of course a necessary accompaniment.

CANNED STRAWBERRIES.—Select fresh and perfect berries and pack them as closely as possible in one-quart glass jars, filling all the little spaces with pulverized sugar. Place the jars on a board in a wash boiler in six inches of moderately hot water—use jars that are quickly and easily sealed—put on the covers, but do not adjust the tight or sealing wire; cover the boiler and let the water come to boiling heat, and remain so until the fruit is well scalded. Then remove the jars, fasten the covers, and put them away in a cool, dark, dry closet where the temperature is not likely to rise above seventy degrees. If such a closet does not exist, put the jars in boxes on the floor of a dry, cool cellar and cover them with sand.

A GOOD ANIMAL TRAP.

The illustration shows the simplest and cheapest box-trap made, and fully as good as the best. It will catch anything from a mouse to a rabbit, and hold it without inflicting pain. Figure 1 gives a front view. Figure 2 a longitudinal section, showing the inside. Both show the trap set, ready for business. For rabbits, minks, etc., it should be six inches square inside, and eighteen to twenty inches long. For rats and mice, three to four inches square inside, and about twelve inches long. It may be made of common boards, half an inch to one inch thick. The engravings show plainly how it is put together. The door slides between two cleats which extend above the box half its depth. It should fit quite closely, so that it will drop easily. Along the top center of the box, inside, are three or four screw-eyes turned into the wood, and in them rests a piece of wire, which is bent at right angles at the farther end, and has a hook to hang bait on. When the door is raised it rests on the end of this wire. When anything touches the bait, the wire is certain to be moved, and down drops the door. It will be noticed that the wire is bent close to the farthest screw-eye. This is to prevent the wire from being slid too far forward. The eyes should be put in and the wire adjusted before the top is nailed on. When rats, mice, minks, or any animals that are dangerous to handle, are caught, immerse the trap in water and drown them.

Fig. 1.

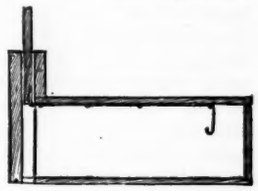


Fig. 2.—FRONT VIEW OF TRAP.

A SERVICEABLE NEEDLE BOOK AND BUTTON BAG.

From pasteboard cut two shapes like that of the shoe in the illustration. Cover them with silk or satin and embroider on one side the scallops and buttonholes. Large French knots may be used for the buttons. Cut out a bag as shown in the engraving, and fasten it between the two covered pieces of pasteboard. Put a bit of beading or gimp around the bottom of it to conceal the stitches. Sew the two sides neatly together, over and over stitch. Cut two pieces of pasteboard the shape of *a*, *b*, *c*, in the illustration, cover them neatly with silk, and sew together. Fasten on the inside leaves cut from flannel or cashmere, with the edges embroidered, and secure this to the top of the shoe from *b* to *c*. Attach a spool to the heel of the shoe by bits of bright ribbon and put a bow of the same at the instep. Pins may be put in along the edges, and a place for scissors made on the side opposite the leaves for needles.

A HANDSOME SOFA CUSHION.

The cushion shown in our illustration is made of terra-cotta plush, the back being lined with silk of the same shade. The dogwood design is very effective, and the work of making it in the following manner is not nearly as tedious as embroidery. After the design is stamped on, the outline of the blossoms is transferred

SOFA CUSHION.

on cream-white satin, and cut out; the different parts are then pasted and sewed on with silk of the same shade. The leaves are cut out of green material, and treated in the same manner, and the stems are done in *arrasene;* this produces a pleasing effect.

BOYS' & GIRLS' COLUMNS.

THE STRAWBERRY KING.

Johnny Moore was a good little boy. If he had any weakness it was for strawberries. He could hardly get enough of them. It was a great pity, he said, that the sweet fruit was so small. He would like to see and eat one as large as his head. "Don't be so greedy, my boy," said his father, "a plate of strawberries is good enough for a king, to say nothing of a little boy like you. Take care or you will some day have more than you can eat." Well, it happened, one warm afternoon in June, that Johnny went home from school, and feeling tired sat down in a fence corner. He looked around at the buzzing bees busy among the cloverheads, and at the yellow butterflies chasing each other through the air. And Johnny mused and said to himself, "I wish, just now, I had some strawberries sweet and big—O, so big!" measuring the size of his head. At once he heard a voice near him saying, "My little boy, I will fulfill your wish." A little scared at first, Johnny looked round and saw the figure of a small stout gentleman, not much more than two feet high, clad in a dress after the fashion of many years ago, with a peaked hat, a Spanish cloak, and red jacket—a veritable little Knickerbocker. He wore a pleasant smile on his round, rubicund face that looked like a ripe strawberry. "I am glad, my boy," said the little man, "to see you here in my domains; for you must know I am the King of Strawberries, and as you are so fond of my beloved fruit, I have concluded to give you a treat of some of my rarest, sweetest and largest." And waving a tiny wand which he held in his hand, he lightly touched Johnny's head with it. The boy observed with wonder and delight how in the twinkling of an eye a mighty strawberry plant grew up, with bright green leaves, and hanging on their stems were ripe strawberries, some deepening in color, while at the top there were snowy blossoms, their petals unfolding yet. On the ground a basket lay filled with ripe fruit, while on a table formed of green leaves was laid a strawberry of gigantic size, that made Johnny's mouth water. "Now is your time, fall to and help yourself," said the little smiling gentleman. So Johnny helped himself, and as he could not swallow the fruit, large as a pumpkin, entire, he took the sharp knife that was sticking in it and cut away slice after slice, so sweet and juicy as never tasted a strawberry before, and Johnny manfully stood by his task and ate and cut and munched until he had managed the whole large fruit. "Well done and bravely, my little man," said King Strawberry. "Now for another dish." When lo! another and still larger strawberry was lying on the leafy table; but Johnny heaved a sigh of content, and said, "No, thank you, Mister King, I have plenty now. I—I think I will come again to-morrow." "O no, my bonny boy, you don't do justice to this splendid fruit; don't be afraid, there are many more and growing larger all the time. You will be glad to see them big as a house, nay, as the moon herself." Johnny was frightened now. How could he eat himself through such a mountain of strawberries? "Please, Mister King," he pleaded, crying, "please let me stop eating, I am so full of strawberry, or I will burst. I will never wish for such large ones again." "Ha! ha!" now laughed with croaking voice an old and dismal-looking raven from the fence. "No more, no more," says Johnny Moore, and like a fearful echo laughed the little man, "No more! no more! my Johnny Moore!" When, lo! again with tear-stained face the boy looked round, and in an instant all was gone. The busy bees still buzzed around the cloverheads. Our little friend arose from the grassy nook and cast back a frightened glance, then hurried home, wondering on his way that he did not feel so very full after the great strawberry feast he had been dreaming of. But when he came into the house, his papa looked at him and asked, "Why do you look so frightened, my boy? what has happened to you?" When Johnny had related his whole adventure with the Strawberry King his papa smiled. "Indeed, that's very strange," he said. "Now do you see, my child, your heart's great wish was fulfilled, and still you're not pleased?" "O, papa dear, I was nearly scared to death; the little man would make me eat another slice of strawberry. No, never shall I wish again so wickedly for big strawberries, but just be glad to eat them as they grow."

"NOW IS YOUR TIME, FALL TO AND HELP YOURSELF."

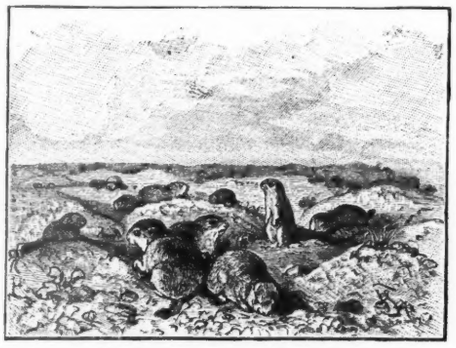
Drawn and Engraved for the American Agriculturist.

PRAIRIE DOGS AND THEIR YOUNG.

Though everywhere called Prairie Dog, the animal has very little in common with the dog. On account of its sharp cry, much like the yelp of a small cur, the French Canadians called it *Petit Chien* (little dog). It belongs to the order of rodents or gnawers—with the squirrels, gophers, marmots, the woodchucks, etc. In general appearance it is much like a small woodchuck. The prairie dog has a body thirteen inches long, and a tail four inches in addition. The color is a cinnamon brown above and whitish or yellow below. The hairs on the back have light tips and some black hairs intermixed. The tail has a black tip. It has very short ears, and large eyes; its cheek pouches are small and rudimentary. The prairie dog inhabits the territory between the Missouri River and the Rocky Mountains, from the northern limits of the United States to the mouth of the Rio Grande. The animals live in burrows, which are about thirty feet apart. The earth brought up in digging these is deposited in a broad flat mound near the opening, is about eighteen inches high, and contains about two cartloads of earth. It is a common belief in Texas, that these burrows go down until water is reached; at all events they are often several miles from any stream. The writer once traveled more than two days through a continuous "town." It was estimated that the wagon train traveled at the rate of twenty miles a day. We passed through this town for at least fifty miles in one direction, while on either hand their burrows extended as far as could be seen. One of our party, with a taste for statistics, estimated, counting two animals to a burrow, there must have been at least 30,000,000 prairie dogs in this extensive community. The animals seem to be constantly on the lookout. Sitting erect upon their mounds, they keep up a continued yelping; when a stranger comes too near they suddenly disappear into their holes, but soon after may be seen cautiously peeping out. Though often fired at, it was seldom that a specimen was secured. It is thought by travelers that they take alarm at the flash of the gun and drop into their holes before the shot reaches them. Rabbits often enter the holes of the prairie dog, and rattlesnakes are frequent inmates; but of all the companions of the prairie dog, a little burrowing owl

is the most amusing. The comical antics of this little bird are laughable. These creatures are tolerated rather than encouraged. The snakes probably find the warmth of the prairie dogs very agreeable, and if they should eat an occasional "prairie pup" it would not be surprising, as they are said to be excellent eating. Those who have access to Central Park can watch the ways of these interesting animals, there being quite a large colony there. They are in an inclosure which is surrounded by a sunken wall, and they burrow within this, apparently as contentedly as if they were on a Texan prairie. They are said to be readily tamed.

Another species of prairie dog is found on the plains of the Columbia, and is called the Short-tailed Prairie Dog. It was originally described as the Burrowing Squirrel, by Lewis and Clark; its tail is about one-half as long as in the common species. In scientific classification, the prairie dog has been placed in various genera. At one time it was placed in *Arctomys* with the Marmot. It is now



A PRAIRIE DOG TOWN.

called *Cynomus* (from words meaning "dog" and "mound"). The most common species is *C. Ludovicianus*, while the short-tailed species is *C. Gunnisoni*.

THE DOCTOR'S TALKS.

In trying to introduce you to the acquaintance of "The Buttercups and their Cousins," I did not have space in which to say all I would like about the Buttercups, and there was no room to say much about the cousins. But my object is that you shall learn something about plants, not merely their names, but how they are made, and how they are alike and are unlike one another. If you study one flower well and understand it, you will also learn much about all other plants with flowers. You are aware that plants are classified and arranged into a system; those most resembling one another being grouped together in families, classes, and other divisions. We may state here, that all plants are arranged in two series—

THE FLOWERING PLANTS AND THE FLOWERLESS PLANTS.—You will usually have no difficulty in deciding whether a plant bears flowers or not, and such plants bear seeds from which other plants of a similar kind may be produced. The flowerless plants, while they do not have flowers, produce a kind of dust (spores), usually fine and dark-colored, which answers much the same purpose of seeds in producing new plants. In this series are the ferns, the mosses, the fungi, and others. You can begin with the Buttercup, and have no difficulty in referring it to its proper series, as it has flowers. Let us return to last month's Talks, as there are some things about the Buttercup that I did not tell you. The parts of the flower I called the "Leaves of the Flower." Some of these do not look much like leaves, but I expect to show you later that this name is not far out of the way. The outer series of these is the *calyx*, and the next within this is the *corolla*, and the two together form the *floral envelopes*, as they cover and protect the *essential parts* or essential organs of the flower. The parts of the calyx are called *sepals*, and those of the corolla, *petals*. The calyx is usually green and leaf-like, while the corolla is mostly of some other color than green, or it is white, and of a more delicate texture than the calyx. Probably in examining the Buttercup your young eyes noticed something that I forgot to tell you about. At the bottom part (*base*) of each petal is a little scale, or a little depression in the substance of the petal, which is thickened at that place; in this case the depression or pit bears nectar, which is collected by the bees to make honey. The older botanists called all nectar-bearing parts *nectaries*, but this sweet is not found in any special organ. To return to our flower. Next inside of the corolla are the *stamens*, each with a *filament* or stalk, and an *anther*, which bears a yellow powder, the *pollen*. In the very center of the flower, upon the end of the flower-stem, or *receptacle*, you find the *pistils*. In the Buttercup the pistil is a little, green, flask-shaped body, larger below (the *ovary*), and containing within this ovary a small roundish body, the *ovule*. This ovule is to become the *seed*, after it has been acted upon by the pollen. At the top of the pistil is a roughened portion, the *stigma*, the office of which is to receive the pollen and convey its influence to the ovule, when that and the ovary enlarge and ripen, the ovule becoming the seed, and the ovary the fruit. The fruit of the Buttercup is a dry pod, but it is as much a fruit as if it were juicy and eatable, like the huckleberry. The fruit of the Buttercup never has but one seed in each little pod, and this never breaks open as some pods do. A pod of this kind, dry and single-seeded, and not opening, is called an *akene*, sometimes *achenium*.

Fig. 1.—CALTHA.

In marshy places and along small streams, you will find, especially in the Northern States, large yellow flowers in great abundance. This plant and its buds are often gathered for use as "greens," and is known widely as "Cowslips." This is an incorrect name, as the flower is not a true Cowslip. In England the plant is called "Marsh Marigold," though there is nothing about it resembling a Marigold. Figure 1 shows the upper part of a stem of this plant, which, as its common names do not suit us, we may as well call by its botanical name, *Caltha*. This name is from the Greek word for "goblet." It is certainly easy to remember and to pronounce—so *Caltha* let it be. I wish you to compare this with a Buttercup, to see in what it differs; but perhaps you will find it enough like that to be

ONE OF THE BUTTERCUP'S COUSINS.—You will notice, in passing, that the foliage is different from that of most Buttercups, not being cut up and divided on the margins, but either rounded or heart-shaped. Now compare the flowers. It is frequently the case that one or both series of floral envelopes are missing, and yet the flower is considered perfect, as it can produce seeds—the chief object of a flower—the stamens and pistils being present. If but one series of floral envelopes is present it is always the calyx, though it is in that case petal-like in texture, and colored. In the *Caltha* the calyx has from five to nine sepals, which are broad and of the brightest yellow, and the corolla is entirely wanting. The stamens are numerous, and the pistils (carpels) from 5 to 15, with much longer ovaries than the Buttercup. If you cut open an ovary lengthwise, you will see that it contains many ovules, and the pistils ripen into a cluster of many-seeded pods, as shown in figure 2. In figure 3 a pod is opened, showing the seed, and in figure 4 the pod, emptied of its seeds, and spread out. By examining the pod without its seed, you can see that it is like a leaf, brought together at its edges, or when young the ovules were attached to the united edges of the carpellary leaf. These united edges form a place for the attachment of the ovules, and through which they are nourished. The most important difference between Caltha, and its cousin, the Buttercup, is that it has several ovules in each ovary, while the latter never has but one. THE DOCTOR.

Fig. 2. Fig. 3. Fig. 4.

JUMBO.

S. ADDIE BEATY, W. T.

I want to tell the young readers of the AMERICAN AGRICULTURIST about our dog Jumbo. He was the especial property of the twins, they having found him the day they crept through a hole in the garden fence, and visited neighbor Penn. Mamma came very near not letting them keep him, on account of the runaway expedition, but they begged so hard, Tot even offering to go without jam on his bread for a whole week, while Tiny, not to be outdone, promising to give all her milk to poor doggie, that Mamma at last consented to their keeping him. At night he slept in an upturned cricket by the side of their bed, until Papa objected to the consequent music, when he was formally escorted every night to the woodshed, carefully wrapped up in his blanket, and laid in a syrup keg. Tom had cut a hole in the side of a box after turning it over, which we all thought made a very nice kennel; but Tiny liked the keg best, and Tot gravely remarked that he "guessed dogs loved sweet things as well as other people." This was in the fall of the year, and Jumbo was nothing but a little round ball of fur, with two bright eyes, and a poor little excuse for a tail that did its best to wag with joy.

By spring he was a fine large dog, and used to go to school with May and Tom every morning, coming home as soon as the scholars left the playground. At last, however, he grew to loitering on the way, and did not reach home until nearly noon, much to the twins' displeasure, so Tot took him out to the kennel, gave him a long lecture, and put him inside, telling him "to stay there till dinner time." Jumbo whimpered a little, as if he understood it all, and held up his paw to shake hands, in his most winning way; but Tot refused to soften, and left him alone to reflect on the ways of a naughty dog. The next morning he came home late again, and without hunting up the twins as usual, crept off to his kennel and stayed there curled up inside until Mamma called him to come and watch the baby. We used to put baby in a big box out on the porch and leave Jumbo to play with her. One day she leaned too far over the edge and would have fallen, but he caught hold of her dress and pulled her back. Baby was feeling lively that morning, and again she fell nearly over; this time Jumbo fastened his teeth in the little belt of her dress, pulled her clear out, and trotted with her to Mamma, dropping his burden at her feet. As Papa said afterwards, he wasn't going to answer for the consequences any longer. After that baby had to have a higher box, and Jumbo was constituted chief guard when she was put out to play. As baby grew old enough to walk, she used to go out and lie in the grass, while Jumbo sat and watched by her side.

JUMBO WATCHING THE BABY.

When the weather grew warm enough, Papa divided the garden into different sized beds, giving us each a plot of our own. Of course the twins had to have their little bed, and with Jumbo they spent most of the spare time there, when the garden fever first came on. Jumbo soon learned not to walk over or trouble any of

the others' ground, but the twins changed theirs so often that he never knew exactly where their plot was. At last, after many ineffectual attempts to teach him his proper place, they made him a nice soft spot in the center to lie on, and planted lettuce all around him, with here and there a few kernels of corn; for, as Tot said, "Tiny likes lettuces and I like corns." "But to look at, it will be horrid," said May; "one part on the ground and the other higher than your heads." "That's just how we wants it," said Tiny; "that's variety. Didn't Mr. Penn tell Mamma that variety was the pickle of life?" Just then a snicker from Tom's garden sent May off in disgust, but she took time to holla back.

"Mr. Penn didn't say pickle, he said spice."

"Well," retorted Tiny, standing up straight with dignity, "it means just the same anyhow. I'd like to know what spice is for if it isn't to make pickles of?"

"Big girls think they know so awful much," said Tot, as he dug a few deep holes for Canary seed.

Of course when Jumbo wanted to leave his nice soft spot, he had to walk over the bed, which, having attracted Tot's attention, he proposed making a path for him to use; so they found a lot of clam shells and made a walk about a foot wide. It wasn't very straight, but it would answer the purpose, they thought. The trouble was that Jumbo never would use it unless they were there to lead him.

While they were working, Tom, who took great interest in the twins' garden, suggested that they raise some pumpkins for Thanksgiving. The idea pleased them immensely, and they begged Papa for some seeds, which they laid down by Jumbo while they marked off a nice little row for them, having first decided to take all the pumpkins that grew on the vine from the biggest seed to the minister's donation party, while Tot guessed that "praps some pumpkins would be ripe by Fourth of July, so he could make a big jack-o'-lantern, and fill it with firecrackers." Just then they noticed Jumbo munching something. Tot opened his mouth, and there, alas! were the precious pumpkin seeds, too badly chewed for any good. Tiny could not keep the tears back, and Tot marched him away to the kennel in disgrace, where he tied him up for the rest of the afternoon. This little bed attracted considerable attention. Aunt Retta used to take company out to see the "twins' garden," when she wanted some special entertainment. The circle in the center was irregularly shaped, looking more like a huge potato than anything else, and the path leading from it was scattered among the few struggling plants and finally lost altogether. The crop was principally pepper grass and cucumber vines. One young gentleman was so pleased with the whole affair, that he sent up a box of candy to the twins, with the wish that they might enjoy the bon-bons as much as he enjoyed their garden. This mark of appreciation was very consoling to Tot and Tiny, and reference was often made to it, so often in fact that Tom declared that he was going to tear up his bed and run the wheelbarrow over it a few times, and see if he couldn't get some candy. Besides his regular garden, Tom had a strawberry bed that he had taken care of for two years, and Mamma had paid him ten cents a quart for all his berries. This was quite a grievance to May, for she had nothing but the little garden spot like Tom's.

At school, one day, the topic turned on grapes. That gave May an idea, and she came home jubilant. It seemed as if supper time and Papa never would arrive, and as soon as she saw the familiar form coming up the street she went flying down to meet him.

"Oh, Papa! won't you give me some money to get some grapevines with, and can't I have part of the ground you had for onions last year?"

Papa smiled down on the excited little figure, and asked, "Why, what is up now?"

"Won't you, please, Papa? Tom has his strawberries, and I haven't anything. You can have half the grapes for two years."

That was a tempting offer surely, so Papa gave her two dollars, and the order was written and sent off that night. Meantime all the papers and books were studied for hints about grape culture. In one of the AMERICAN AGRICULTURISTS was an article telling her to put a half bushel or more of old bones under each vine. Well, that was an undertaking; but nothing daunted, she scoured the neighborhood for old bones. The twins proved themselves most valuable aids, and received the promise of all the grapes they could eat by-and-by. They conceived the brilliant idea of watching Jumbo to find where he buried his bones. Poor fellow, he did not get many nowadays; but they found two or three in their garden, which had a rather uneven look most of the time.

In due time the grapevines came, nice two-year-old plants, and great care was taken with the transplanting. May watched and tended them faithfully, and they soon commenced to leave out. The whole family had then to come and view their progress. Jumbo was also interested and kept sniffing around, and trying to scratch away the boards laid down to protect the earth about the roots, until he had to be driven away, he was so naughty. One morning, before going to school, May took the boards away to let the sun warm the ground. In the evening, when she came home, the first thing was a visit to the "vinery," as she called the little plantation. A big hole caught her eye. She rushed forward, and found two of her beautiful plants scratched up, and the earth and bones lying scattered around in heaps. There was a sorry-looking little girl that went to meet Papa that evening, but there was a sorrier-looking dog out in the back yard, whose feelings were badly hurt. Poor, bad Jumbo, what a whipping he received that night, while his poor nose was rubbed nearly off on the old bones. He hardly dared to come within sight of any one for a week, and would not touch a bone for several days. At the kitchen door was an old rug that he thought very nice, and during his period of disgrace could nearly always be found curled up on this rug. It was right in our way, going in and out of the door, and we had to make him move every time we passed through. He soon became tired of so much moving, and at last carried the rug off to the woodshed door and laid down there. So Mamma said to let him keep it there as long as he wanted.

From the woodshed door he had a good view of the vinery. One day our little Maltese Kitty, with whom he was on the best of terms, picked her steps along in that direction. Jumbo immediately pricked up his ears and watched her. On she went, and stopped at the grapes. He gave a growl, but she sat still; he barked loud and long, still she moved not. At last he ran into the house and pulled Mamma out. She looked but could see nothing, so said, "What is it, Jumbo? Go catch it, good doggie," patting him on the head. Jumbo gave one bound and dashed for Kitty, who flew at the top of her speed over the garden, on to the fence, and out into the street, Jumbo after her. Soon he came back wagging his tail, trying his best to say, "I'll take care of the grapes; nothing shall touch them when I'm here." He had learned his lesson well, and now seemed to think the matter all right again, and himself restored to his old place in our affections. May forgave him easily, as the vines were not hurt by the digging up, but grew nicely.

Last May day there was a big picnic down the bay, nearly everybody being present. We all went except Mamma and baby. Tom wanted to take Jumbo, but Papa objected, and Mamma said she wanted Jumbo to stay at the house. Walter Kelton had his dog at the picnic, and great fun the boys had with him, which made Tom wish more than ever that Jumbo was there too. We all thought our pet just a little the smartest. Coming home from the landing, the new Professor carried Aunt Retta's basket, and they were having a nice little chat, when who should come running down the block to meet her but Jumbo, with one of her evening boots in his mouth. Poor Aunt Retta! she did not know what to do. She did not want to carry the boot through the street in her hand, and she could not afford to lose it, and here was this new friend taking in the whole scene. Jumbo had no idea of her distress; he joyfully greeted her, and turned around and trotted along in front of them all the way home, the dainty shoe dangling from his mouth. He has not carried anything away from the house since. He sometimes takes Mamma's overshoes out in the yard to play with, but never has lost one.

Jumbo has one bad trait, however. He is a most unfilial dog. His own mother is Mr. Penn's dog Fanny, and when she puts her nose under the fence, instead of being glad to see her, he barks ferociously. Tot and Tiny have often taken him to task about it, but in vain. They are very anxious that he should be on good terms with Fanny, for they want to harness the two together. May made a nice harness for Jumbo, and he draws the wagon nicely with Tiny in it, while Tot walks and drives. They think that if they could harness both dogs to the wagon, Tot could ride too, and that would be "simply splendid." Tom has promised to have Walter bring Carlo over some day soon, and they will teach him to pull with Jumbo. Meanwhile Tiny is learning to drive, so Tot can ride part of the time.

Jumbo is getting to be a very wise dog. He brings Papa the daily paper every morning before breakfast, and helps Tom bring in the wood. He likes to have Mamma take his stick from him and put it right in the stove. He seems to think that then his work is amounting to something. Taking all things together, we could not spare our good dog Jumbo, and as Tot was telling Tiny yesterday, "When he gets as old as you and I, won't he know lots?"

MENTAL AND PHYSICAL HAPPINESS IN ANIMALS.

The study of animal life is of necessity an important part of the education derived in "the school of the farm," and some of the shrewdest observers of the habits and ways of beasts, birds, and insects are among the people engaged in agriculture or gardening. The strange and curious conduct of these creatures is ever before their eyes, and they must be blind indeed if they are not impressed by what they see. The most distinguished naturalists, like Darwin for example, have made a special study of animals and plants, and have thus deduced theories, novel at first, but subsequently winning general acceptance, while they have enriched the knowledge of mankind with multitudes of marvelous facts and observations pictured to the life. The question as to the reasoning power of animals is always a matter of interesting discussion, and the more fond the man or woman is of the horse, or the dog, or the cat, the more sure are they that their own particular pet is ranged quite among advanced thinkers. Instinct is a wonderful and mysterious power, a sort of "unreasoned prompting," but often apparently guided by so keen an appreciation of cause and consequence, that it seems to bear the marks of intelligent forethought and calculation. Recently the question has been asked whether "animals are mentally happy?" and a writer on this subject adduces many proofs and illustrations that point to an affirmative answer. The different kinds of mental delight are classed as follows: the recollection and the anticipation of bodily pleasures, which animals show by their action when the hour of exercise or feeding approaches, or when the horse, turned homeward, quickens its pace. Then there is the pleasure accompanying bodily activity and mental activity. The first is apparent in the gambols of dogs and horses, in the almost incessant movement of birds, as for instance of pigeons, which "domesticated for generations, fly about all day long, though they need to seek neither food nor shelter." A few moments' attention to birds on the wing will convince any observer that many of their antics are for "pure fun," the absolute enjoyment of their exuberant animal life. White, of Selborne, notes the action of ravens and rooks and pigeons in their bird play as a decided expression of individual happiness. See a bird drop heavily in the air, as if he would go prone to earth. He recovers himself and soars upward again in a flood of rapturous melody that has but one interpretation, and that of his extreme delight in his own powers. In considering the pleasure of mental activity in animals, we find them possessed of parental feelings, of industry, curiosity, a sense of freedom—as shown by the captive bird, or the feline animal forever pacing the limited length of his cage; and on the other hand, among the painful activities, are the emotions of shame, grief, terror, and fear, so often exhibited. Then again "the acts of natural savagery which result in the infliction of physical injury by one animal on another," no doubt afford pleasure to the perpetrator. They are the means of satisfying his nature. The victim suffers pain; the victor looks complacently upon his cruel work. Spontaneous song is no doubt a sign of cheerfulness in birds. They will sing in the free air. They often lose their voices or withhold them in captivity. Animals that seem to be happy probably are, and one need only watch lambs in a paddock, or rabbits in a warren, to be convinced that neither the opportunity nor the capacity for enjoyment was wanting. The feeling of home-memory and association is strong in most migratory birds. They return this year to the immediate scene of their last year's delights.

When the question of the ideal pleasures which form so important a part of human enjoyment comes to be raised in connection with animals, and when the relations to other individuals, to the family, the tribe, or to the animal creation at large, come to be considered, we reach a point of departure between the possibilities of happiness of the man and of the animal. There have been, to be sure, "happy families" composed of individuals which were natural enemies, but which lived in peace and harmony together. Girls have entered the cages of lions, and lambs have been introduced to the same cage, to make a menagerie holiday. Horses and hens have been established allies, and the most singular and unexpected compacts of amity have been entered into; ideal friendships, in fact, in which every sign of mutual content and satisfaction was shown. Animals are at least exempt from serious thought for the morrow—a potent cause of human wretchedness. Their griefs are few and short lived. Paley notices the evidences of happiness among animals, and speaks of "their excess of spirits," their mute signs of delight, their intelligent proclamation of their happiness. One thing which may be noticed, as Mr. Carlill (whose article in the *Nineteenth Century* we have under consideration) observes, is that "man habitually sees the worst side of animals." Their acquaintance with man is attended by "a dread which constantly oppresses them." Their manner is shy and constrained, but, he confidently asserts, "that the more closely men have been enabled to observe animal life, as it exists when freed from the constraint of overpowering humanity, the higher has been the conception formed by the observer of the gladness of that life."

We think this is a conclusion that the millions of observers on the farms and in the gardens of this country, and in other lands, have already reached, wherever and whenever they have followed up the questioning with carefulness and a thorough desire to get at the truth. Animals not only exhibit the possession of physical happiness and enjoyment, but they express a mental condition of the same sort, quite as well established as need be. They cling to life tenaciously and take every precaution for security. Suicide is not a deliberate habit among them. They take no such means to avoid the ills which they may endure. The Norwegian lemmings, which periodically immolate themselves by millions, appear to be an exception to this rule. But their irresistible march to the sea is apparently only an effort to get rid of a hungry and overcrowding surplus of numbers. It is like the march of ants in Africa. The miller that flings itself into the evening lamp is no suicide. He is simply the victim of misplaced confidence and of a reckless spirit.

PITHY PARAGRAPHS.

Watch and hoe.

Consult with your wife.

Breed up and not down.

Clean baskets and crates are good salesmen.

Cut clover at, or just before, the hight of bloom.

It is highly extravagant to use low-priced mower oil.

Fine surface soil is a mulch that will antagonize drouth.

Fly nets for horses will save oats to more than their cost.

Cut orchard grass in early bloom—later it makes poor hay.

The hog doesn't object to a seasoning of curculio in his fruit.

Keep harvesting in mind for two weeks before the work begins.

Paint applied to undried, unseasoned wood only hastens decay.

If the weather is dry, mulch around trees transplanted this spring.

Double the use of water externally and discard hot liquids internally.

The less you disturb the sitting hen, the better she will attend to her business.

"All work makes Jack a dull boy," and no work makes Bill a very mean one.

The only thing that will stop knavish advertising is the sudden death of all fools.

There is no profit in ministering to a hog diseased when the disease is swine plague.

Better feed the inferior fruits and vegetables to the hogs than to send them to market.

Before any man goes in debt he should read of the bondage in Egypt of the children of Israel.

The secrets of large yields always and everywhere are rich soil, good seed, and thorough tillage.

Beauty always attracts, and it is not dishonest to send clean, bright berries and fruits to market.

Buying hay caps may be a species of gambling with the weather, but they are good lottery tickets to hold.

"There is no place like home," and when we observe some homes we are very thankful that there isn't.

It is as unjust as it is unwise to shoot the birds because they take a few berries—they have earned a feast.

When the wife and children attend to the poultry, it isn't fair to exchange eggs for tobacco and machine oil.

To be thrifty an animal must be comfortable. This is true in the spring or summer, as well as in the winter.

The work horse will be benefited by spending the agreeable nights on the pasture after it has made a good growth.

Plowing under grass and clover makes the largest addition to the soil of the best kind of plant food at the same cost.

There is this difference between the poor and the good farmer: one complains of the bad seasons, the other rejoices in the good seasons.

A good crop of both corn and weeds cannot be grown on the same ground at the same time, any more than two railway trains can pass each other on the same track.

Temperature of Cream.—Mr. Albert Maker, Champaign Co., Ill. Cream, when churned, should be kept at a temperature of about sixty-two degrees Fahr. To attain this it is best to begin at sixty degrees in warm weather, and at sixty-four in winter.

A Concrete Chimney.—P. D. Cory, Bryan Co., Georgia. Cement would not be as suitable a material as quicklime for making a concrete chimney which will be exposed to heat. Lime, with sharp sand and other materials in the same manner you suggest using cement, will not only be more effective, but much cheaper and more easily handled.

Keeping Butter.—J. C. Ownbey, Lincoln Co., N. C. To preserve butter unimpaired through warm weather, it is necessary to keep it cool and excluded from the air. The best packages for this purpose are of wood. Where ice cannot be easily obtained the butter may be kept in a cool cellar, or, in the absence of such a convenience, in a house built over a spring, or even suspended in a well just above high water mark.

Canning Fruit.—J. C. Ownbey, Lincoln Co., N. C., asks us for the best way to can peaches and other fruits for family use. Peaches are first peeled, the pits removed, the fruit halved, then put over the fire and heated until thoroughly scalded through, and a little sugar is usually added. They are then put hot into the cans, which are filled quite full of the fruit and syrup, so as to wholly exclude the air, and then securely sealed. If glass jars are used they should be heated before being filled, or the hot fruit will burst them. The best way to heat the glass jars is to put them into a boiler partly filled with cold water, which is gradually heated to boiling. Two or three thicknesses of cloth are put into the bottom for the jars to rest on. These jars are closed air-tight by a screw cover. Tin cans may be sealed by wax or solder. The points indispensable for success are to see that the fruit is scalded clear through, the cans completely filled and securely sealed.

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A LETTER FROM MARION HARLAND.

[FAC SIMILE.]

I regard the Royal Baking Powder as the best manufactured and in the market, so far as I have any experience in the use of such compounds. Since the introduction of it into my kitchen, three years ago, I have used no other in making biscuits, cake, etc., and have entirely discarded for such purposes the home made combination of one-third soda, two-thirds cream of tartar.

Every box has been in perfect condition when it came into my hands, and the contents have given complete satisfaction. It is an act of simple justice and also a pleasure to recommend it unqualifiedly to American housewives.

Brooklyn Nov 30, 1887. Marion Harland

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Ensilage for the Prairie States.

The attention given to silos and ensilage in the Western States has induced the State Board of Agriculture of Kansas to make a thorough investigation of the subject. The committee in charge consisted of Messrs. William Sims, Thomas M. Potter, and O. E. Morse, and their conclusions, derived from careful investigations, are worthy of the consideration of not only the farmers of Kansas but of all those who would increase their resources of forage. The suggestions of the committee are summed up as follows:

First—That the time has arrived when the more progressive and economic methods of conducting the dairy and beef-producing interests should command the thoughtful consideration of Western farmers. *Second*—That the method of preserving green crops by means of silos, now common in the older States, is generally commended as practical and profitable by those having the largest experience in the business. *Third*—That ensilage, if intelligently prepared, is a good, wholesome article of food for cattle, and, when fed as it should be, in connection with dry feed, will materially increase the product and profit of the dairy; make the production of beef more remunerative; improve the condition of hogs, and enable the farmer and stock-grower to realize profits not promised by the methods now common in the West. *Fourth*—That corn is the most profitable crop for ensilage, and for this purpose the seed should be drilled at from eight to ten inches, in rows three and one-half feet apart. Good cultivation is required, and the crop should be cut just before or about the time the ears begin to glaze. *Fifth*—That the corn planted, cultivated and cut as above indicated, will average not less than twenty tons of ensilage per acre; that in feeding value, three tons of corn ensilage will equal one ton of tame hay, or that one acre of corn, when made into ensilage, will equal about seven tons of hay; that the feeding capacity of a given amount of land can be at least doubled by the method proposed, and that, too, without adding materially, if at all, to the cost per head for the animals fed.

Bee Notes for June.

A. H. DUFF, O.

If increase of bees alone is desired, it requires quite different management from that of raising a crop of honey. The amount of increase always governs the surplus crop. If this is allowed to reach its utmost limit, nothing can be counted on in the way of surplus honey. The artificial process of increasing stock is doubtless far ahead of natural increase or swarming. The first step in preparing for artificial increase is the rearing of young queens. This should begin as early in the season as the weather will permit, and the number be governed by the amount of increase desired. If we succeed in securing fertile queens success is well-nigh assured. The queen is the mother of the whole colony, lays all the eggs from which hatch workers, drones, and queens. Having queens in readiness, colonies may be divided up into as many parts as are desired, each division being supplied with a laying queen. If too many divisions are made at once they are weakened and will be some time in gaining strength. Each part should be strong enough to allow the queen plenty of comb in which to deposit eggs. It is better to divide a colony in only two parts at once, supplying the vacancies with empty comb or foundation, which is inserted between the brood combs, when the queens will at once fill them with brood. The parts thus divided will be ready to divide again in a few days, and so on, regulating the time for making those divisions according to the amount of bees and of brood just hatching or nearing maturity. If feeding is not resorted to the amount of increase is more or less controlled by the honey flow. When it is of short duration the work cannot progress so rapidly.

If honey is the sole object, little if any increase of bees should be allowed, though to obtain the best results in honey it is not necessary to strictly keep down all increase. We find at times, where colonies are very strong, that better results are obtained by dividing them, or, what may be better, if they are ready at the proper time, to allow them to swarm. In doing this, there is seldom need for more divisions. To check increase or natural swarming keep removing all queen cells as fast as constructed by the bees. Another important point in procuring heavy crops of surplus honey is to give abundance of storage room. This not only secures the best crops, but is a prevention of swarming or increase. There is much difference in the disposition of colonies. Some are inclined to swarm, and all efforts to prevent it are futile, while others seem to be satisfied to keep down to business. There is a never-failing remedy even for persistent swarmers, but we never feel like resorting to it until everything else fails. This is to take away their queen. It always holds them in check, at least until they raise another, which they will do if brood of the right age is left in the hive. We can in this way hold them eight or ten days; after which it will not be safe to remove the queen without furnishing them young brood from other colonies, or they will become discouraged and fall a prey to robbers. Where first swarms in such cases persist in issuing, they will do better to be hived separately, reinforced from other colonies, and followed up with surplus receptacles. The most important point is giving abundance of room at all times during the honey flow. This serves two important purposes. It not only discourages swarming, but is the key to large honey crops.

Notes on the May Number of the American Agriculturist.

BY AN "OLD FARMER."

"A May Day Outing."—Once when I was in New York, the editor of the AMERICAN AGRICULTURIST asked me "what department of the paper I liked best." I told him that was a hard question to answer. I read the whole paper and like it. "But," said he, "what part do you like best? What articles do you read first?" "The pictures," said I, and I thought he did not like it. It is the truth, however. As soon as the AMERICAN AGRICULTURIST arrives, I instinctively turn to the pictures. They are always good. In fact there is nothing that compares with them for real excellence in any other agricultural or horticultural periodical.

"Farm and Garden Work."—I always read the remarks on this subject, and never fail to get some valuable hints. I could wish there was more of it. Dr. Alexander, of Princeton, used to tell his students to "cultivate a flow." The editor of the AMERICAN AGRICULTURIST makes his writers condense, and if they don't do it, he does it for them. That is right. We do not want long-winded articles; but if the writer knows what he is talking about, we want full details. "Live Stock Notes."—These are excellent, but I was sorry to read the remark that young pigs did not need fattening food. You cannot feed young pigs too well.

"Now for a big Corn Crop."—We need it; but why did not the writer tell us how to grow it? We often hear of one hundred bushels shelled corn per acre, but I never happened to see such a crop.*

You are right in recommending clean cultivation. It is the great secret of successful corn growing, with or without manure. "Our Farmer Boys."—God bless them! They are the hope of the country, whether they stay on the farm or go to the cities. There is no lack of farmers, and I fancy that the cities need good, honest, country boys. Success to them wherever they go! "Practical Fish Culture for Farmers."—Seth Green always talks right to the point. "Adulteration of Milk."—As a farmer, I want to thank Mr. Dewey for his successful defense of the milk producers. "Market Gardens in France."—That is quite an idea, using manure for forcing, and then selling it when half rotted to those who live farther from the city. It takes three loads of ordinary city manure to make one load of half-rotted manure. Read the article again There is a good deal in it that is worth thinking about. In many American cities manure is too high. It is refuse matter that the city people ought to be glad to have removed for nothing! "Feeding Young Pigs."—We all know that milk is good for pigs—the trouble is to get enough of it. One would think, from the remarks that many writers make on this subject, that farmers threw their spare milk away. They may not believe in the "streak of fat and streak of lean" theory, but they know that milk is good, and use every pint of it. The "Basket" is full of good things.

* Yes, crops of one hundred bushels of shelled corn are rare, but they are not an impossibility. We have seen, on the farm of Mr. E. S. Carman, on Long Island, a crop of one hundred and thirty-four (134) bushels of shelled corn raised on one acre of ground. The variety grown was Blount's Prolific, the soil a light sandy loam, the fertilizer used was Mapes' Corn Manure, applied three or four times during the season—altogether not over one-quarter of a ton—and the cultivation consisted of running a cultivator between the rows after every rain, and after the application of the fertilizer. The labor and expense bestowed upon this acre was not more than any intelligent farmer gives to his crop, if he expects a big yield. On the same farm four acres of Chester County Corn yielded eight hundred and fifty-six (856) bushels of shelled corn, the best acre 159.37 bushels, the poorest 63.75, average 113.69, actual measurement.—EDS.

Monthly Crop Report.

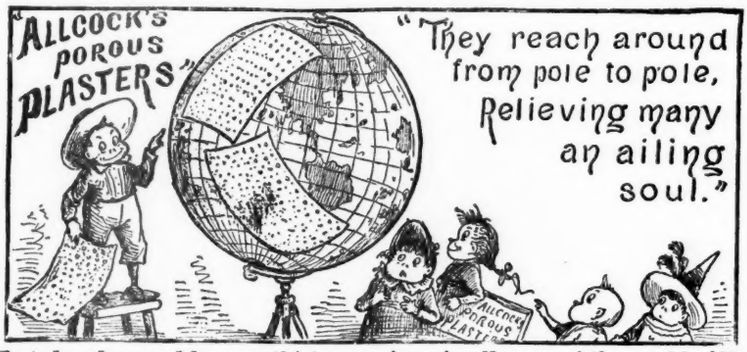
WASHINGTON, May 12.—The report of the Department of Agriculture states that low temperature and deficient rainfall, with drying winds and some frost, have reduced the condition of winter wheat in the Central States. It has also been cool on the Atlantic Coast, and not favorable to improvement, and yet the plant has nearly held its own in this region. On the Pacific Coast only a medium development is reported. In the Southern States changes are slight, several averages being the same as last month. Pennsylvania shows a decline of 4 points, New York 16, Ohio 12, Michigan 12, Indiana 6, Illinois 7, Missouri 2, Kansas 3. The general average is reduced 9 points, from 82 to 73. Last year condition was reduced from 88.1 in April to 85.8 in May. The State averages of winter wheat in the principal States are as follows: New York 76, Pennsylvania 87, Virginia 90, Ohio 56, Michigan 64, Indiana 59, Illinois 57, Missouri 80, Kansas 94, Texas 90.

Winter rye remains very nearly as in April, the average being 92.9 instead of 93.5. The condition of winter barley is 88.3, promising a medium crop. Spring plowing is not quite so well advanced as usual. It is relatively later in the more Northern States of the Atlantic Coast, slightly later than usual in the Middle States, and scarcely up to a full average in the South. Its progress is an average in the Ohio Valley, but late in the Northwest, especially in Dakota.

Cotton planting was delayed by excess of moisture in February and low temperature in March, the soil not being in condition for early planting. The delay was greatest in Texas and Louisiana. In Arkansas, Tennessee, and North Carolina, from 4 to 6 per cent less than usual was planted on the first of May. In States on the coast, from South Carolina to Mississippi, planting is nearly up to the average advancement.

An investigation of the rate of wages of agricultural labor shows that no material change has occurred since the last previous inquiry in May, 1885. There is a slight increase in New England, in the northern tier of States from Michigan westward, and in some of the Southern States. There is no appreciable change in the Central States.

Destruction of Our Elms.—L. F. Brencoke, Westchester Co., N. Y. The depredations of the larva of the imported Elm-leaf Beetle (*Galeruca xanthomelæna*) have now become so great in the Eastern States that it is quite probable that all the European species of the elm, if not the American, will soon be destroyed. The beetles seem to prefer the European elms, but as soon as these are stripped of their leaves they go directly to the indigenous elms. All the remedies thus far tried or suggested are unsatisfactory, owing to the difficulty of application. On small trees the worms may be destroyed with kerosene emulsion, carbolic acid solutions, creosote, tar-water, etc., but on very tall and large trees the cost of applying insecticides would be far more than the trees are worth. Furthermore, it is a waste of time for one man to apply remedies while his neighbor allows the beetles to breed unmolested, for these insects have wings and know how to use them when in search of their food.



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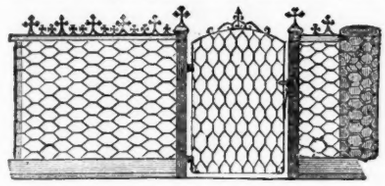

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Marcus C. Gowman, Essex Co., Ontario, Canada, writes us: "I am glad to find a paper which has no hobbies, and which can substantiate everything it says. It is as good a birthday gift as a person need want, and is welcomed by all who ever perused its pages. Your Humbug Department is an excellent feature which Canadian papers would do well to adopt."

"We know of no agricultural publication that interests so wide a circle of readers, that is so valuable for its practical suggestions, or that is so finely illustrated as the *American Agriculturist*. It is indeed a model publication, and the low price at which it is offered, combined with its many attractions and premium offers, have given an immense circulation."—*The Claremont, N. H., Advocate.*

J. Millard, Mamistee Co., Michigan, in forwarding his subscription to the *American Agriculturist*, writes: "Your tempting offer to your friends to renew old friendly relations received. We enclose the amount. Also I enclose a postal which we think represents one of the Sundry Humbugs which we in the good old times (when we subscribed before) so enjoyed seeing you 'go for.' By-the-way, Did you know you won our hearts and commanded our admiration more in the olden time by your prowess and courage in that kind of a skirmish than by any other one of your many virtues and excellences? Well, it is true, and since the friendly intimacy between us has ceased, we found no one else to delight us with such game qualities, and we are getting hungry for that kind of a feast again, and that is the way you have got our money this time. You couldn't have got it any other way. May your shadow never grow less, and may you prove only the forerunner of a race of knights to pierce with Damascus blade the abounding shams and humbugs."

In forwarding a subscription for one of his sons, C. H. Wiggins, Fulton Co., N. Y., writes the following, which we take the liberty of publishing: "Your invaluable journal is not a stranger to him nor his father, although we are both new to you, and now that he has a very direct interest in perhaps as valuable a farm as there is in Montgomery County, we find it necessary to post ourselves at the 'rerum fontes,' and we have been doing it the past year with a vengeance, I assure you. We have six or seven years of back numbers of the *American Agriculturist* prior to 1879, and they have been diligently studied and referred to. Whenever anything is required, anything in doubt, the *American Agriculturist* is on the table ready for reference, and let me say it, under the rose. Now since chemical analysis and synthesis don't exactly "jibe" for farmers, and Liebig didn't, and his successors don't, do as much for us as we could wish, I have an idea the back numbers could suffice, but the young blood has over-ruled the gray hairs, so the son will be a constant subscriber, so he says, and it has my approval. He is of the fourth generation on the farm, and I hope he and his heirs will go right on reading the *American Agriculturist* for another hundred years, and then commence again. I wish to say how sincerely thankful I am for the many things I have learned from your pages. They have never failed to give me the right thing just at the right time, I could not help saying this much."

Sale of Pure-Bred Cattle.—At the recent sale of Aberdeen-Angus cattle from the herd of T. W. Harvey, Turlington, Nebraska, at Chicago, eighteen cows and heifers sold for $6,760, an average of $375.50, and ten bulls for $3,735, an average of $373.50. The total for twenty-eight animals was $10,505, an average of $375 each.

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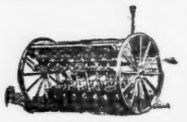

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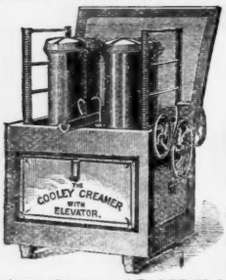

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Sparrows.—The Ohio Legislature has passed a law giving ten cents a dozen for English sparrows killed by any inhabitant of the State. The heads of the birds are to be taken to the town clerk, who will issue a certificate on the treasurer for payment. The sparrows "must go."

Remedy for Mange.—R. L. M., Queens Co., N. Y., writes us that although the sulphur ointment recommended in our May number will cure mange in dogs, he has found Thymo-Cresol more effective and far more convenient to use.

The Buffalo Exposition.—An immense building is in process of erection at Buffalo, N. Y., for an international fair and exposition, to be held September 4th to 14th. The exposition is to embrace live stock of all kinds, machinery, objects of art, etc. C. J. Hamlin is President, F. C. Stevens Vice President, and C. W. Robinson Secretary, of the Fair Association.

Educational.—As the commencemen' season approaches, public attention is naturally directed to the places where "our best crops," the boys and girls, are educated. In the advertising columns of this issue will be found the announcement of several of the most successful and desirable schools in the country. Parents and guardians will do well to consult these advertisements, and send for circulars.

Strawberry Show in New York.—The Farmers' Club of the American Institute will hold a Strawberry and Rose Exhibition in this city during the second week in June. The exact date has not yet been decided upon. Liberal premiums are offered, and an attractive and interesting "Show," especially of new varieties, may be expected. Those intending to exhibit may obtain Premium Lists and information of the date of the Exhibition by addressing the secretary, D. R. Gardner, American Institute, New York.

Import of Potatoes.—The poor potato crop of last year caused a large increase in the importation of potatoes, as shown by the following figures, taken from the latest report of the Bureau of Statistics:

	Quantity, Bush.	Value.
March, 1887	56,735	$ 22,608
" 1888	1,645,497	783,317
Nine Months, ending March 1887	901,428	221,343
" " " " 1888	5,418,504	2,254,579

Children and Arbor Day.—In treating of Arbor Day in the April number, the State of Connecticut was inadvertently omitted from the list of the States in which that holiday was established. Connecticut fell into line in 1886, and at the day designated in May, 1887, the school-children all over the State, under the care of their teachers, took part in the exercises of collecting and planting trees. It was a day of much interest to the pupils, and to their parents and friends, and indeed to all the people in the State. If the children can be interested in this matter, and given a good hard day's work, with pleasure and competition thrown in, the object to be sought by Arbor Day will be attained.

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Scales of all Sizes. 5 Ton Wagon Scale with *Brass Tare Beam and Beam Box,* **$60.** *For free Price List of all kinds, address*

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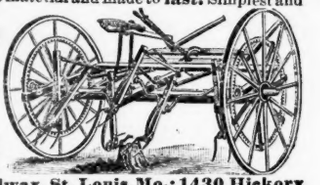

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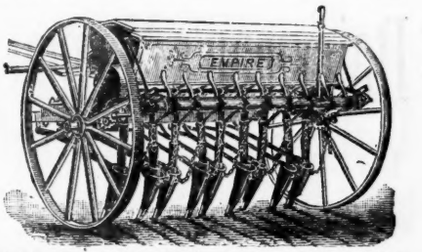

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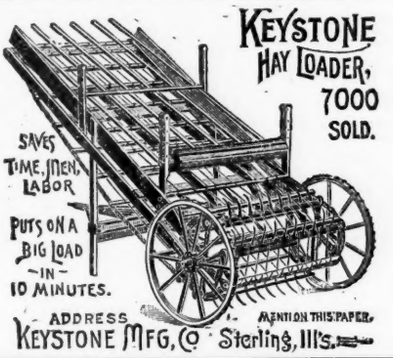

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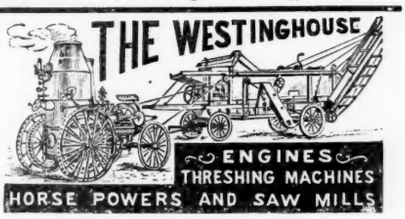

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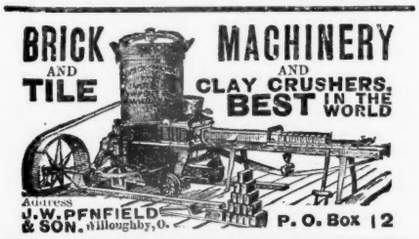

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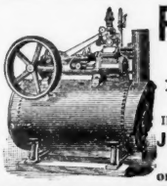

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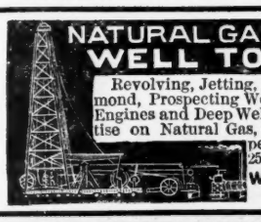

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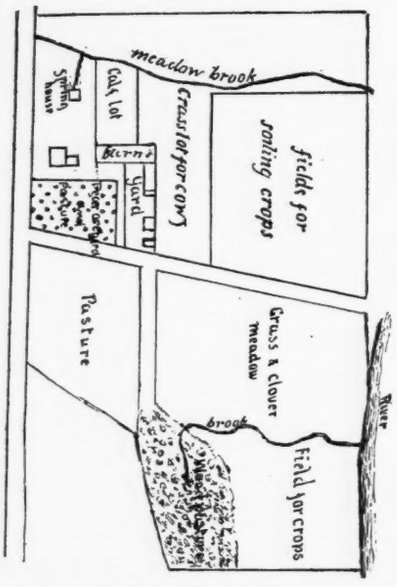

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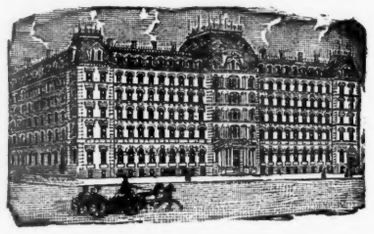

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Why Not Give His Name?

"Farmer" writes from Center, Ala., and asks three questions. He does not give his name, nor does he inclose papers by which we may learn exactly what he desires. If "Farmer" wants the aid of this "invaluable journal," as he styles it, let him give his name, not for publication, but as a guarantee of good faith. When chestnuts are to be drawn from the fire, it is well to know who is to profit thereby.

Needle-work and Lace Companies.

Letters continue to come to this office inquiring about the "Needle-work Company" in 8th Street, and the Lace Co. in Chicago. We have made the suggestion before, and may repeat it: Is it likely that persons in real want of the labor of others would go to the expense of postage, printed circulars, etc., when a simple advertisement in a New York or Chicago paper (offering like inducements) would summon thousands of women right at home, who would be only too glad to do the work proposed on the terms submitted? There it is in a nut-shell, which our readers may crack and pick at their leisure.

Misleading Insurance Schemes.

"F. G. A.," Dakota. An Insurance Company which offers to discount the rate because you are a clergyman, a Sunday school superintendent, an editor, a lightning-rod agent, a prize fighter, or a member of any privileged class, is justly liable to suspicion. All men stand on an equality as insurable persons, and must depend upon their individual merits, and not upon a presumed position of influence. Experience has shown that insurance of life or property not based upon established principles and practices, and appealing to man's inherent passion for cheapness, is sure to result in disappointment and loss at the very time when both are hardest to be borne.

Shut your Eye to Itinerant Oculists.

A correspondent in Pennsylvania writes as follows: "For a week or more a bold swindler has been operating in Chester Co., Pa., among farmers. He goes to a house and asks if aged persons, or anyone with defective eyes lives in the house, saying that he is an eye doctor who will examine eyes free of charge. In some cases he cites the name of the family doctor, and tells the family he has been sent by him to treat any cases of weak or impaired eyes. During the examination he produces some little white particles, generally pieces of rice grains, which he says he has removed from the eyes. After the examination he demands money, from twenty-five to one hundred dollars, and by sheer threatening sometimes gets it. I have heard of his securing in one case fifty dollars."

No Investments in "Green Goods."

The Dominion of Canada is being flooded with the "green goods" circulars, mostly sent from New York, and the outlying stations of Jersey City and Hoboken. So great has this evil become that the Minister of Justice has broken ground in the Canadian Parliament in behalf of a bill to punish with severity, persons handling these goods, and to prohibit the advertisement of them in the Canadian papers. Multitudes of circulars are sent to this office by those who have received them. The game is pretty well understood by this time, and no recent case has come to the front in the New York courts. The latest case in Hoboken was of a man who came in from Alabama, and who was caught in the act of paying for a package of the "green goods." He stated he was a lawyer, and that he did not know he was doing anything very wrong. The lawyer was searched at the police station and was found heavily loaded with cards and other articles that proved him to be a gambler. He was held for examination. Not much sympathy was expressed for any man, gambler or lawyer, who would engage in such an enterprise. The duty of every one who receives these "green goods" circulars is to destroy them, or forward them to the police or postal authorities of the city indicated in the address inclosed, or in some way bring the criminal dealers to an account, or at least to publicity. The man who tampers with these offers, or who engages in the scheme to possess these "green goods," is himself guilty of criminal purpose. The AMERICAN AGRICULTURIST has frequently dealt with this matter before, and no new word of warning is needed. The very intermeddling with these dangerous counterfeits seems to carry its own punishment with it. Not long ago two men from "way down East" in the Provinces, came to New York to buy "green goods." They put up at a hotel. They were too ignorant to turn off the gas when they went to bed. So they blew it out and in the morning were found dead—asphyxiated—and on their persons were the proofs of the "business" that had called them to the city. Not much sympathy was wasted upon these unfortunates, cut off so untimely on the very threshold of crime. The Hon. Amos J. Cummings has introduced a bill in Congress to punish with three years imprisonment all persons having these "green goods" circulars in their possession.

"Yellow Goods" a Substitute for "Green."

The "green goods" men are on another "tack," and this time it is "hard tack." They offer now to furnish "gold," or goods so like gold that "the best coin experts" cannot tell the difference. They demand that the pay for this stuff shall be in greenbacks, because if it is in gold the buyer will be sure to bring some of the bogus coin, which it is claimed is in common use, although everybody is ignorant of the fact. Indeed these coins have been cut in two and drowned in acids without betraying their secret! After such assertions as these, the circular drops into blasphemy, and with many appeals to God, and Christ, and the Almighty, and a hereafter, and "your mothers and fathers, and your own honor," proceeds with the details of the offer, and asks the victim to come to New York and see for himself, and if all is not as is represented his "expenses to and from home" will be paid, "as sure as I expect to meet my God." This "hardware" business has already reached the New York police, and every effort will be made to block the little game of these new aspirants for State's Prison. From A. L. W., of Kelso, Dakota, and others, these circulars from the dealers in "yellow goods" have come to us, and we reiterate to them the familiar caution to give a wide berth to these criminal suggestions. It is as dishonest to buy and use these counterfeit wares as it is to sell them, and the steps of both buyer and seller lead only to shame and disgrace. The address that accompanies the Kelso circular is "H. Pinder, 744 Broadway, New York City, care News Dealer."

Avoid "Catarrh Cure" Circulars.

An unceasing stream of complaints flows in upon the AMERICAN AGRICULTURIST concerning the alleged cures for catarrhal difficulties that are sown broadcast over the land. There are a thousand and one of these remedies, and each one aims to surpass the others in its vociferous claims for a hearing, and in the multitude of its pretensions to be the "only sure, and reliable." Some are for external application, some for internal use, some are solid, "some fluid," some vaporous, and all are mostly "gaseous." If half that is claimed were true, catarrh would long since have been sent into permanent exile, or laid away in the cold ground. It would have become an unknown and extinct disease. Yet in spite of all the remedies, and particularly in spite of the millions of circulars that are wafted abroad by every breeze, catarrh still remains as intolerant and intolerable as ever, and disposing its victims to waste their money upon whatever nostrums are recommended to them by the medium of the post-office. We advise our readers not to waste their money on these schemes, but if they would have a palliative, and perhaps a cure, apply to a good physician.

Land and Improvement Companies.

G. T. T., of Philadelphia, complains against the "St. Andrew's Bay Railroad and Land Co.," because he was by them "done" out of four dollars, for which he has "not even a piece of paper to show." Mr. T. is very severe upon the Company, to which attention has already been called in the AMERICAN AGRICULTURIST. Land and Improvement Companies are a very common means of divorcing a man and his money, and not much to the satisfaction of the man. There is hardly a neighborhood in the United States where these companies have not been organized, and where they have not uttered their magnificent promises and then gone on to ruin, not only their dupes, but oftentimes their promoters. These schemes, perfect on paper, but imperfect and disheartening in results, may be found scattered along the lines of railroad near all our cities and towns, and looming up by the seaside and lake side, by forest and river, wherever a sanguine soul discerns the possibility of a hypothetical increase in value. The wrecks of these "paper cities" are quite numerous around New York, not because there might not have been good, solid foundation for them, but because they were too purely speculative, and started off on a basis of "great expectations" with forced and unnatural prices. The hundreds of flourishing suburbs near all our cities are prosperous proofs of what wise and well regulated plans can accomplish. But as to these remote and intangible castles in the air, we can only emphasize the caution to let them alone, until there is more definite knowledge. In a Pensacola paper of a late date appears a long article describing the insanity of a Mr. Aldroyd, of Illinois, who lost his reason because of his disappointments and losses at St. Andrew's Bay. The Pensacola journal calls upon the governor of Florida to interfere and punish the men who lead astray trusting strangers and colonists. It is only just to the Florida people to say that the active agents in these land and improvement concerns are mostly non-residents, or very recent comers. "C. B. W.," Pulaski City, Va., is one of the unfortunates who has had a "free lot" from the company above-named, and has a deed therefor which bears a particularly "regular" look. He has written to the county clerk where the deed was recorded, but receives no reply, and he is very much concerned to know what is the matter. Doubtless many will learn too late "that men betray," and that it is poor policy to trust to paper promises.

Victims of "Generous" Offers.

Dr. S. P. T., of Michigan, might have expected the reply he received from the "Crayon Portrait Co." of Chicago, or something closely assimilated thereto. The very generosity of the circular was suspicious. "Life Size Crayons" are costly articles, and not to be given away to strangers for naught. You were as fortunate in the return of your photograph as the minister was who sent his hat around for a collection and thanked the congregation for restoring it in good condition, even though they had dropped nothing in it.

G. C. P., of New Orleans, is right in supposing that the offer from Milwaukee to publish a notice of himself was in its nature a "humbug." It was a cheap immortality that was offered, and he and his friend did well to disregard the opportunity to be herded together with scores of people unknown to them, and doubtless of very small account in their respective spheres.

CAUTIONARY.

Untrustworthy Insurance.

A favorite method for working the "confidence game" among farmers is through alleged insurance companies, and among them the companies that propose to insure live stock are the most pressing. Several such companies have been organized in New York and other large cities, and nearly all have finally succumbed to misfortune, much to the damage of policy holders. Within a few days the pretended agent of the "New York Live Stock Mutual Benefit Association" has been arrested in Connecticut on a charge of issuing fraudulent policies. The Company in question collapsed some months ago. A lock-box in the post-office is still retained, and some effort to do business is made. In all probability there is a free distribution of "circulars" by this Company. We caution our readers against placing confidence in representations made to them in the suspicious guise of offers to insure their property. There is a multitude of bogus insurance and mutual benefit companies in existence. They are not confined to the large cities, but find a congenial field of operations in the small and secluded villages. Many of them exist only for the profit of their officers, and when any loss falls on those insured, the concern immediately collapses or migrates to a new locality, and sets up business under a new name.

Leading into Temptation.

G. W. S., of Caro, Mich., inquires concerning a "Trafficking Bureau" in this city, which curiously enough deals "directly" in old jewelry and old pieces of silver or gold, and indirectly in some other things. It also employs agents in the United States and Canada to buy the precious metals and jewels it covets. It is easy to see that such a scheme as this might prove, if cleverly worked, a serious temptation to servants and others to "gobble up" and dispose of articles of which the owners did not know the value. A word of caution ought to be sufficient to prevent these old articles of jewelry from getting on the wrong side of the "fence."

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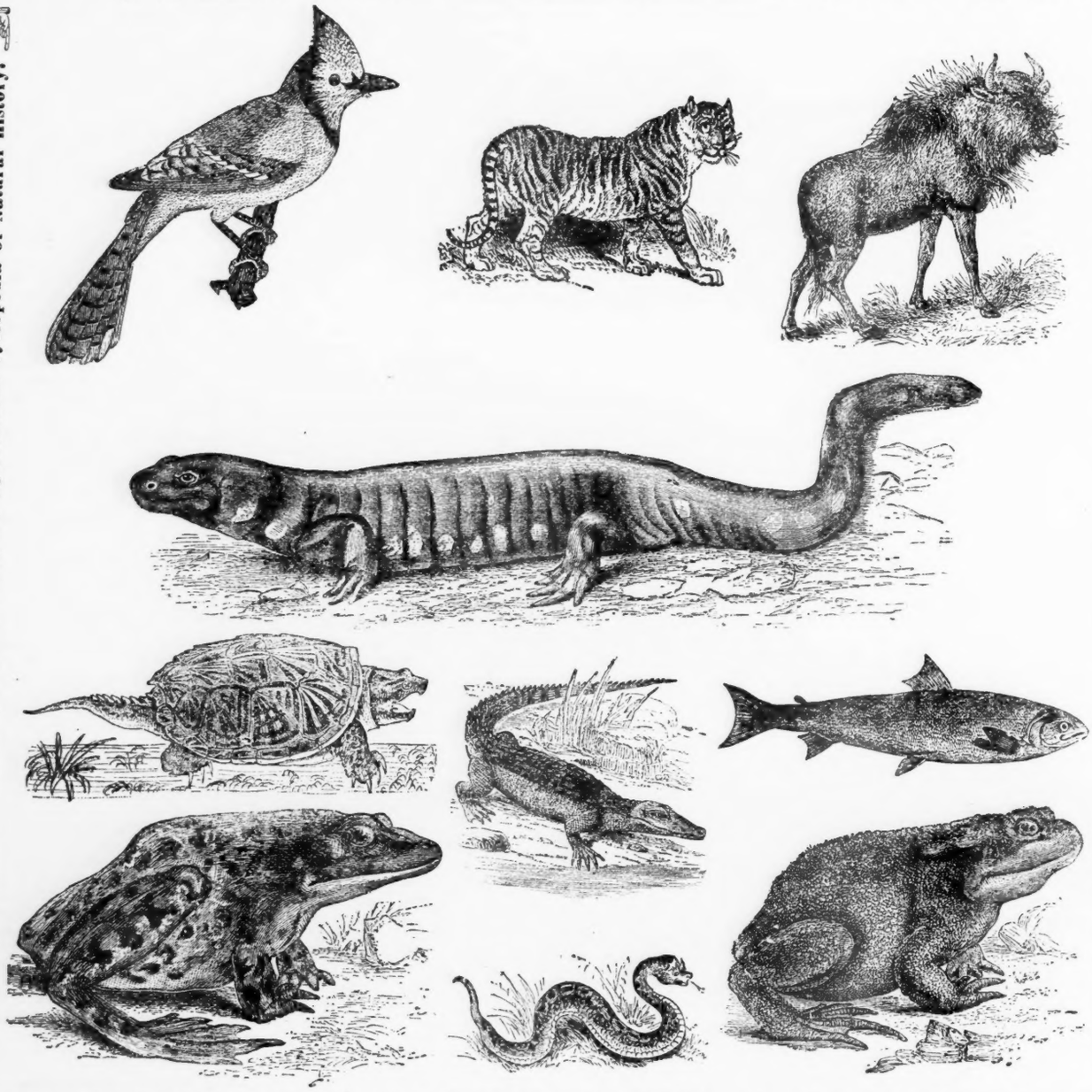

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Good Books.

Do not fail to read the descriptions of valuable and useful books to be found in the advertising pages. As the summer months pass by there will be opportunities to profit by the many hints for work in the farm, garden and household which are to be found therein, and a reliable book at hand is always a good thing.

Gleanings from Home and Abroad.

The French Government has offered a prize of $10,000 for the discovery of means of detecting adulteration in wine. If such means could be devised, the whole world would join in paying the prize.

In Holland thirty-six dollars yearly per acre is often paid as rent for land on which cows are kept. Yet the Holland dairymen are supposed to make large profits. They hold their cows at a high valuation—an average of one hundred and fifty dollars.

The egg product of Massachusetts increased from 3,446,530 dozen to 7,072,200 in the last two years. The milk product doubled, the butter increased nearly 2,000,000 pounds, tobacco declined, oats, barley, corn and buckwheat increased, and the number of horses and cows was liberally auvanced.

The grape growers of California are finding a good use for turkeys, which run at large in their vineyards and devour the insects. By this means thousands of dollars are saved which otherwise would be wasted. The turkeys meanwhile thrive on the insects, and prove a source of profit to the vine grower.

John Thorpe states, in the *American Florist*, that he has found a solution of three tablespoonfuls of pearline in a quart of boiling water, with an addition of three quarts of cold water, an excellent remedy for fungus in propagating benches. The cuttings were thoroughly and repeatedly watered with the solution.

By the Census of 1880, the lumber cut of the Pacific States was 693,000,000 feet. In 1887 it was 1,370,000,000. Half of this cut is consumed in California, and most of it in the three southern counties of that State. The estimated value of the lumber in the Pacific States, when placed at tide water, is more than $20,000,000,000.

The State of North Carolina has established experimental farms in each county of the State. They will take up the appropriation of the general government of fifteen thousand dollars, and it is proposed to ask in the next General Assembly a liberal share of State aid for these farms, and for the making of county exhibits at the State fairs.

It is officially stated in Paris that large quantities of spirits made from potatoes are imported into France, then doctored up and exported as genuine cognac. Spirit made from the potato is very powerful and deleterious in its effects, and if this spirit forms part of the brandy which is exported from France all over the world, those who use brandy, whether as a beverage or for medicinal purposes, will not be very certain of having the genuine article.

In the Utica cheese market in 1887, 387,485 boxes of cheese were sold. This is an advance of more than 60,000 boxes on either of the two years previous. The value of the cheese sold at Utica in the last year was two and one-half millions of dollars; an increase of from twenty-five to thirty per cent over the two former years. An increased business over last year is expected for the year 1888.

A State Dairymen's Association has been formed in Kansas, and it is proposed to encourage the formation of auxiliary associations in each county of the State, the membership to consist of dairy farmers, cheese factory and creamery men. There are about 600,000 cows in Kansas, from which the State Association estimate that a product of $24,000,000 in butter and cheese could be made.

The *London Quarterly* says that fifty years ago England raised all the wheat it consumed; now it raises only one-third of its breadstuffs. In Essex, England—a few years ago one of the most productive counties in the kingdom—there is a spot from which nineteen vacant and uncultivated farms can be seen. Population increases and wants increase, but agriculture is unprofitable in the presence of the competing products of other lands.

The *Minnesota Farmer* strongly and with great propriety urges upon the Governor of that State the appointment of farmers to the three vacancies in the Board of Regents of the University of Minnesota. The University includes an agricultural college, an experiment station, and a mechanical department. No farmer has ever been made Regent. Here is a good chance for a representative farmer with broad, liberal and progressive ideas.

Iowa has followed Ohio and Michigan in passing a very stringent law to suppress and punish such "enterprises" as the sale of "Bohemian oats." Penalties of great severity have been enacted, and already the operators in this "rural method of gambling," as the *Iowa Homestead* calls it, have crossed over into Nebraska to ply their vocation there. The attempt to get something for nothing is gambling and nothing else, no matter what form it takes.

The French Minister of War, before giving an order for the manufacture of military clothing, investigated the wool product and gives the following figures: world's annual product of wool 800,000 tons, value $600,000,000. Of this Europe produces one-fourth part, Australasia one-eighth part, India, Central Asia and China three-sixteenths, the United States one-tenth. France has 22,000,000 sheep, and imports 80,000 tons of wool per year. Half of this is used for the army and navy.

Within a very few years the buffalo has been abundant on the far Western plains. Now this animal is rarely met with in a wild state. A praiseworthy effort is making to prevent the entire extirpation of the buffalo, and a range is provided for them in the National Park. *Forest and Stream* notices the arrival at Washington of two specimens—a male and a female—of this species, and suggests that others should be added, in order to maintain the race by breeding government buffaloes at the capital. This is an enterprise worthy of the Smithsonian Institution.

Eagles and wild turkeys are still very numerous in the Blue Mountain range, that occupies a large part of the counties of Central Pennsylvania. Near Pottsville, Reading, Lancaster, and Harrisburg, sportsmen find an abundance of game. The wild turkey has in that range natural breeding and feeding grounds, and eagles remain there because the food convenient for them is so accessible. They are indeed rather more numerous than the farmers like them to be. The turkeys are hunted in the period from early fall until the winter snows are deep.

The Agricultural Commissioner of the State of Alabama, Mr. Kolb, has been visiting the Northwestern States to present the claims of Alabama upon those who have a desire to change their place of residence and seek a more southern clime. Alabama has two million acres of Government land, much of which can be purchased for $1.25 per acre. Mr. Kolb has been warmly welcomed in the Northwest, and the inducements held out by him to intending or possible settlers are quite alluring. In fact it would be difficult to find any part of the United States without attraction for residents. The best of it all is, that there is variety enough to suit every possible taste.

The *Pacific Rural Press*, in an article on the ups and downs of the nursery business in California, doubts whether the nurserymen who burned up French prunes in 1886 because they could not get $6.00 per hundred for them, did not regret their haste when they tried in 1887 to scrape together trees enough to fill orders at $25.00 per hundred. The California fruit growers want yearling trees, and the *Rural* remarks that if the nurseryman leaves his stock in the ground for two years, he finds it necessary to establish a logging camp and a saw mill to work the trees up into furniture or fence boards.

Arbor Day has been observed more generally and more enthusiastically this year than in any former year since the day was established. It is noticeable, both in the East and in the West, that a special effort has been made to interest the children of the public schools, and their teachers and other school authorities, to engage in the work of tree planting. Trees are set out in school grounds and on the neighboring streets and roadsides, and so the highways and villages are made more attractive. Parks, lawns and churchyards, cemeteries and available fields upon the farm, have been attended to, and the result is not only millions of trees transplanted, but a very encouraging prospect for the future.

Elsewhere in this number, the destruction of rabbits in Australasia is noticed at some length. Since that article was written some more facts of interest have come to our knowledge. An anti-rabbit convention was held in Sidney some time ago, at which one of the most prominent delegates from New Zealand stated that in some cases where land was rented at three pence per acre it costs six pence per acre to keep the rabbits down; that large tracts of country had been abandoned because the rabbits had fairly driven out the people and the sheep and cattle, and government tenants were making application to the authorities to surrender their lands. In Tasmania, in six years, the number of sheep had decreased by two hundred and fifty thousand. Nearly a million kangaroos were destroyed in one year, and there was a deadly battue against other wild and noxious creatures. All these things go to show that the rabbit population of the United States, of which there are a dozen native species, should be repressed, and the introduction of Australian rabbits, as has been proposed, should be positively prohibited.

Write to Your Congressman.

The article in the AMERICAN AGRICULTURIST for April concerning the defects of the United States Census, and showing that one-fifth of all the horses in the country, one-sixth of all the cattle, and one-tenth of all the swine are not enumerated, has attracted much attention not only in the agricultural press but in the newspapers generally, and Congress is urged to provide in the new census law for the scheduling of horses, cattle and swine "not on farms." As it is now, only those animals that are "on farms" are enumerated, and consequently immense numbers are omitted in the count. These animals, too, are of great value; especially the horses. The Census of 1880 gives to the city and county of New York only 207 horses, and these are on the farms in the upper part of the city. There are at least 200,000 horses and perhaps 300,000 in New York City, and this vast number is entirely ignored. The horses in all the cities are the product of farms, and the farmers ought to know where the animals raised by them are, and what they are doing. The animal interest omitted in the Census is altogether too large to be disregarded. It is reckoned at hundreds of millions of dollars in value. Write to your Congressman and ask him to see that the new census law corrects the errors of the old.

Ostrich Farming at the Cape and in California.

In South Africa it is claimed that next to wool production and diamond mining, ostrich farming has contributed more to the prosperity of the Colony during the last few years than any other industry. Good ostrich feathers will always be in demand, and at high prices. In the better days of ostrich farming at the Cape, the average pluck of a bird was worth from one hundred to one hundred and twenty-five dollars. This gradually fell away until it was not worth more than from seven and a half to ten dollars; yet where ostriches of improved breeds were kept, the yield was frequently about twenty-seven dollars a pluck. A pair of ostriches can be kept on an acre of well tilled land, and each bird will produce from fifteen to twenty dollars' worth of feathers a year; there being two pluckings. In Australia the ostriches have thrived, and have proved a source of profit. Some attempts at raising these birds have been made in California, but the industry is not thoroughly established yet. In 1883 the first shipment of ostriches from Cape Town to California was made. Two hundred were shipped, and twenty-two birds arrived safely and were started upon a farm at Anaheim, in Los Angeles County. Thirty-three birds have since been imported by the same farmer, and many home-bred ostriches are on the ranch. A second farm was started with twenty-four birds at San Diego, and in 1886 a third farm was opened in Los Angeles, forty birds being safely imported. In 1884 the Cape Colony government imposed an export duty of $500 on every ostrich removed from that country. This is a very high duty, and were not the profits from ostriches large, it would be prohibitory. The United States now take about one-half the product of South African ostrich feathers, on which the import duty is twenty-five per cent on raw feathers and sixty per cent on dressed. It is claimed that the California feathers are of unusually fine quality, owing to the fact that green food can be found in abundance at all seasons of the year. Last year there were six ostrich farms in Southern California, and hundreds of "baby" birds were hatched in incubators. They are curious creatures, tumbling around like little chicks, and about the size of the average adult hen. The *California Cackler* predicts a profitable future for this industry. One egg will feed a small family, and one ostrich will set in glorious array a full dress circle of ladies. At present in South Africa the business is overdone, and ostrich farmers are rather discouraged. This condition is partly owing to the fault of the raisers, who have destroyed the birds by plucking the feathers before they were mature, for the sake of forcing the market.

Oleomargarine in Various Lights.

The Supreme Court of the United States, in a Pennsylvania case, has affirmed the power of a State to prohibit by law the manufacture or sale of oleomargarine; whether that product be good, bad, or indifferent, healthful or unhealthful. In the city of New York, the Recorder has sentenced to the penitentiary, for three months, a wealthy grocer who pleaded guilty to an indictment charging him with selling oleomargarine. This is the first case of imprisonment under the law. Heretofore fines only have been imposed. The State Board of Health of Massachusetts have made a report to the Legislature of that State, in which oleomargarine as an article of food is favorably regarded, and very little weight is given to the prejudice in favor of butter, except as a "prejudice," and because in some cases butter may be more palatable to invalids and others than its substitute. The report states that the oleomargarine was in every case found made of wholesome substances, that no adulteration with unwholesome articles was discovered, and on the whole a very good "send off" is given to oleomargarine. In the decisions and report above named, a wide range of opinion is made manifest. Nothing is said in either of one of the main points in the issue, which is the sale of the substitute butter, as butter, without the branding or statement necessary to inform the purchaser as to what material he is really obtaining. The results on the whole strengthen the claims made by dairymen.

Business Department.

The Enterprise Meat Chopper.—The Enterprise Manufacturing Company, of Philadelphia, has won a legal triumph in the United States Circuit Court. Having brought suits for alleged infringement against the manufacturers of rival machines, the Company has obtained an order enjoining the defendants from manufacturing, selling, or using machines like the Enterprise until the final hearing of the case or further order of the Court.

Africanized Horse-Power.—A. W. Gray's Sons, Middleton Springs, Vt., have recently shipped one of their tread powers to Africa for trial. As its destination was so near the equatorial region that horses could not endure the climate—in fact there are no horses there—the motor was supplied by a sufficient number of the dusky natives. The machine proved to be just the thing to give force and direction to the power of the crowd of half naked Africans. As labor is plenty and cheap there, more machines are likely to follow.

Half Holidays.—The Pope Manufacturing Company, of Boston, Mass., have fallen in with the movement for summer half-holidays in a neat and graceful manner. They publish a lithograph of artistic and unique design, suitable to display in a store or office window, announcing the hour of closing Saturdays. By an arrangement of stickers, any hour can be indicated. The company will present one of these free to any early closing place of business, or will send one on receipt of a two-cent stamp.

Change of Location.—Mr. J. H. Bates has removed his advertising agency from the old stand, 41 Park Row, to the lofty Potter Building, 38 Park Row, New York. It is one of the oldest agencies in New York, having transacted a large business successively as S. M. Pettingill, Pettingill & Bates, Bates & Locke, and for the last ten years under the sole proprietorship of Mr. Bates. During this long period over fifteen million dollars worth of business has been transacted in a manner which with scarcely, if ever, an exception proved mutually satisfactory to all concerned.

Procuring Patents.—Thousands of patents are issued for inventions which have no pecuniary value. The unfortunate inventors, after devoting much time and money to the subject, find themselves with nothing in return but an empty patent. It is from this class that the "no patent, no pay" solicitors derive their principal profits. Business is conducted in quite a different style by Frankland Jannus, Esq., whose office is in the Pacific Building, Washington, D. C. He carefully examines existing United States patents in considering inventions submitted to him, and frankly advises his clients, not merely whether patentable, but also whether a patent would have any value. His fees are never made contingent upon the issue of a patent which may be worthless in a business sense.

Reminiscences of Ben. Perley Poore.—Messrs. Hubbard Brothers, of Philadelphia, have brought out in "Perley's Reminiscences," a book which has a peculiar interest for every one. It is the ripe fruit of sixty years' observation of people and events at the national capital by the veteran journalist Ben. Perley Poore. During that long period he left his Massachusetts farm every autumn for Washington where he remained until the ensuing summer. He was an acute observer, and mingled freely in the political and social life of the capital. The period was the most eventful and momentous of any in the nation's history. The book is like a series of living tableaux of those events in which the actors were the men and women whose names are historical. It is profusely illustrated, and sold only by subscription.

American Hay Presses Abroad.—The *Occidente*, an illustrated journal of Lisbon, Portugal, in a recent issue has a handsomely illustrated article describing the trial of the Whitman Hay and Straw Press at Coimbra. The trial was witnessed by several members of the royal family, the ministers of war and public works, and many others. The trial was eminently satisfactory to the august personages present. The steam-power machine was purchased for army use, and the horse-power press by the minister of public works and agriculture. Besides this, the Duke of Palmeira and other landed proprietors bought presses for use on their estates. The whole affair was doubly gratifying, as illustrating the success of American inventions abroad, and also the progress of agriculture in Portugal. The Whitman press is made by the Whitman Agricultural Company, of St. Louis, who were represented on the occasion referred to by their agent, Mr. A. V. Perrin.

Catalogues Acknowledged.

JOS. BOSLER, JR., Carlisle, Pa.—Descriptive Circular of the Cumberland Valley Poultry Yards.

BOOMER & BOSCHERT PRESS COMPANY, Syracuse, N. Y.—Descriptive and copiously illustrated Catalogue of Power and Hand Cider and Wine Presses, Graters, Pumps, Elevators, and Cider-making Machinery of all kinds. These presses have an enviable and universal reputation, as may be seen by the many testimonials from prominent cider manufacturers throughout the country. A spirited photograph of the "Old Cider Mill" is sent with this Catalogue.

O. A. A. GARDENER, Byron, Neb.—Price List of Trees, Shrubs, Greenhouse and Vegetable Plants.

A. A. HALLADAY, Bellows Falls, Vt.—Circular and Price List of high-bred Langshan Fowls.

J. S. HAWES, Colony, Kan.—Circular of the Mount Pleasant Stock Farm.

KEYSTONE MANUFACTURING COMPANY, Sterling, Ill.—Descriptive and richly illustrated Catalogue of first-class Farm Machinery, Hay-loaders and other Haying Implements specialties.

GEO. LESLIE & SON, Toronto, Can.—Price List of Surplus Nursery Stock.

WILLIAM PARRY, Parry P. O., N. J.—Illustrated Catalogue of Small Fruits, Fruit and Ornamental Trees; also Ayrshire Cattle and Carp.

E. G. PREECE, Shrewsbury, Eng.—Circular of pedigree Hereford Cattle and Shropshire Sheep.

M. WILLIAMS, St. Johnsville, N. Y.—Illustrated and descriptive Catalogue of Improved Horse Powers, Threshers, and Cleaners.

WM. C. WILSON, Astoria, L. I., N. Y.—Catalogue of Roses, Greenhouse and Bedding Plants, etc.

H. W. HILL & Co., Decatur, Ill.—Circular of Hill's Triangular Hog Ringer. A unique and striking card and poster, giving the Hog Laws of 1543 down to 1886.

That Fence Again.—J. W. Thompson, of Texas, referring to a claim made in our May number, page 196, by the Rev. J. C. Forsyth, stating that the fence described on page 106 of the March number was patented by Mr. Rappelye of Seneca County, New York, says he remembers very distinctly seeing the same kind of fence in use in Texas in the year 1867, and wonders if the patentee can show a claim prior to that date. This fence has attracted a great deal of attention, and some parties who have constructed it have been called upon by agents, or reputed agents, of the patentee, and we have received several letters on the subject. Mr. John Oldenburg, Clermont County, Ohio, informs us that the wire picket fence in question "has been in use more than twenty years" in his part of the country. He wants to know "how long the fence has been patented?" Mr. William Johnston, Lincoln County, Mo., writes to the AMERICAN AGRICULTURIST: "The same kind of a fence was put up in Audrain County, Mo., in 1873, but I do not know if they used the same kind of machines to weave the slats on the wire that Mr. Rappelye uses." Men were around in 1873, "trying to sell farm rights to put up this fence," and in 1876, in Warren County, Mo., men were trying "to sell such rights for ten dollars a farm." A lady in Kentucky, who has been annoyed by a claimant of royalty for this fence, writes us that in reply to her letter to Washington, the Commissioner of Patents stated that "Mr. Rappelye owned such a patent, and that it would not be out for two years, but he (the Commissioner) could not advise her whether or not she could build a fence out of a book." One of our correspondents thinks a patent for this sort of fence was issued in 1854 or 1855, that the patent had run out, and that the claim now made is on the machine used for the weaving. So much has been said about this matter that it will be, in order for the Rev. J. C. Forsyth to put in a fresh appearance, and make a more definite statement in regard to the claim of his friend in Seneca County, N. Y.

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A most valuable work of 250 pages, and plans for all buildings, from a hen house, piggery, horse and cattle barn, to one of large dimensions, and of a $6,000 mansion; plans for all buildings that any one may need.—*Western Farmer* (Wisconsin.)

It presents a variety of designs which cannot fail to prove of value to all who anticipate building, the more especially as specifications, bills, quantities and estimates of cost are given. The chapter on useful memoranda for estimating is alone worth the price of the book. —*The Weekly World* (New York.)

Of special interest to those who are planning to build. —*New York Observer.*

It contains a complete series of rural buildings, with cost of home in each case. The series of plans for barn and other outbuildings is also very complete. Many are given with all needed details and specifications, from barns costing several thousand dollars, to humble shelters, either for temporary use or for the needs of farmers where winter is never severe.—*Minnesota Farmer.*

In each case the cost of the house is given as accurately as possible. The portion of the work devoted to dwellings, includes minute and specific directions for the erection of adobe buildings and houses for pioneers; comfortable and substantial houses which home-builders in the Far West may erect with their own hands.—*Pacific Rural Press.*

Not only is the building of houses, cottages, churches, school-houses, barns, poultry houses, wood and tool houses, etc., been considered, but the aspect, site, exposure, drainage, plumbing, heating, ventilating, colors, papering, furniture, shrubbery and gardening.—*Fremont* (Ohio) *Journal.*

It is a practical book, is clearly defined, and beneath its covers may be found much of value and importance to those building or contemplating building in the country. —*Nebraska Cultivator.*

A practical guide of no little value to people living in the country. The illustrations are much to the point, and the author's introductory hints on important things to be considered in building a house, can be read with advantage by those for whom the book is intended.—*Boston Daily Advertiser.*

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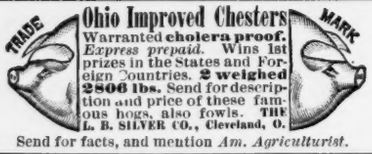

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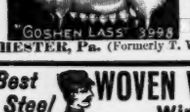

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